

No. XI.—LEPIDOPTERA, EXCLUSIVE OF THE TORTRICIDÆ AND TINEIDÆ,
WITH SOME REMARKS ON THEIR DISTRIBUTION AND MEANS
OF DISPERSAL AMONGST THE ISLANDS OF THE INDIAN OCEAN.

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(Communicated by J. STANLEY GARDINER, *M.A., F.R.S., F.L.S.*)

(Plate 17.)

Read 17th June, 1909.

TABLE OF CONTENTS.

	Page
I. Introduction	265
II. Systematic List	267
III. Synopsis of the Distribution - Table, showing Geographical Affinities of Lepidoptera in each Group of Islands	313
IV. Table showing the Distribution of the Lepidoptera in and around the Indian Ocean	314
V. On the Distribution of the Lepidoptera in the Islands of the Indian Ocean	317
VI. On the Means of Dispersal of Lepidoptera in the Islands of the Indian Ocean	319
VII. On Widely Distributed Forms of Lepidoptera	321
VIII. Literature	322

I. INTRODUCTION.

THE present collection, consisting of about 1218 specimens of 131 species*, was made during the Percy Sladen Trust Expedition to the Indian Ocean in H.M.S. Sealark, during the months of May–November 1905. A general account of the Cruise, with a description of the islands visited, has already appeared in these ‘Transactions’ (vol. xii. parts 1 and 2).

Omitting consideration of Mauritius and the Seychelles, the geological character of all these islands may roughly be stated to be coralline and their soil calcareous. They are all low-lying, being scarcely elevated above the level of the sea, and the similarity of their soil limits to a large extent any great diversity in the vegetation, the uniformity of this latter of course governing the insects. Hence we can hardly be surprised to find a remarkable paucity, not merely in the variety of species in these islands, but frequently also in the number of their individuals.

* Exclusive of the Tortricidæ and Tineidæ, which Mr. E. Meyrick, F.R.S., has kindly undertaken to determine.

Our stay in Mauritius was far too short for any serious attack on its lepidopterous fauna, which promises to be of great interest, although up to the present only the larger and more conspicuous species have been collected, even the references to these being scattered throughout the field of entomological literature.

The three weeks which we spent in the Seychelles, followed by a further month spent in Mahé and Praslin by Messrs. Stanley Gardiner and Forster Cooper after the departure of H.M.S. Sealark, yielded a small but representative collection of the larger Lepidoptera, our success being largely attributable to the ready and generous help of the local collectors. Our thanks are due to Mr. J. A. de Gaye for kindly permitting us to select a large number of insects (many of them unique) from his own collection, and for forwarding specimens of several new and scarce species which he has discovered since we left the islands; to Mr. H. P. Thomasset, of Cascade Estate, for his hospitality and most useful help in enabling us to collect along the higher parts of Mahé; to Mr. Dupont for a selection from a small collection of insects from the Seychelles and from Marie Louise Island, Amirantes; and to Mr. Connor for a small collection of Lepidoptera from Frigate Island.

As regards the other islands, the collection may be considered on the whole as satisfactory, and as probably representing some seventy or eighty per cent. of their Insect Fauna. It must be remembered that the conditions under which we worked were not of the most favourable. The short time at our disposal, the large amount of ground to be covered, and the scanty number of workers, all combined to prevent exclusive attention being devoted to any one group of insects. Our greatest amount of collecting was done in the Chagos Group, but it was then the dry season (May–July) and perhaps not the most favourable time of the year. To some of the other islands (South Providence, Poivre, D'Arros, Eagle) we were only able to devote one day apiece, and only two or three days each to Cargados Carajos, Farquhar, and Desroches. Under these circumstances we could not expect to obtain more than a proportion of the fauna of any particular locality, and probably of those obtained most belong to the commoner and more conspicuous forms.

One of the most interesting points connected with an insular fauna is the question of the derivation and means of entrance of its component species. To attack this question the first requisite is a knowledge of the range of the species outside of the area under consideration, and I have therefore stated under each species its exact range so far as it is known to me after a lengthy search through entomological literature and collections.

For ease in comparison of their distribution I have added a table of all the species dealt with, showing their occurrence in certain areas around the Indian Ocean.

Finally, I have endeavoured to analyze the geographical connections of the species occurring in each of the main groups of the islands visited, and have added a few suggestions as to the means by which they may have obtained an entrance into these islands.

The types of all species described as new in this paper, together with a selection of the other specimens obtained, have been deposited in the National Collection.

II. SYSTEMATIC LIST.

Family **Arctiadaë**.1. *Utetheisa lactea*, Butl.

Deiopeia lactea, Butl., Zool. Collns. of H.M.S. 'Alert,' p. 577 (1884).

Utetheisa lactea, Hampson, Cat. Phal. iii. p. 482, t. 50. f. 6 (1901); Hampson, A. M. N. H. (8) i. p. 481 (1908).

Farquhar I.—Twenty-seven specimens. Of these, fifteen agree with the type in the "entire absence of the usual scarlet markings" &c., but the remaining twelve show more or less conspicuously distinct signs of a red pattern on the fore wing. In its most pronounced type (specimen no. 6066) this takes the form of a longitudinal subcostal bar extending from about $\frac{1}{4}$ to a little beyond $\frac{1}{2}$, a rather broader submedian longitudinal stripe from about $\frac{1}{3}$ to just beyond the origin of vein 2, and a longitudinal interrupted stripe below and parallel to the second stripe and bounding the anterior edge of vein 1; all these three stripes are of vermilion scales intermixed externally with orange scales. Besides these stripes, there are pale orange spots, of which the best defined are three subbasal, two costal, one subapical, one at lower angle of cell, and one on anterior margin of vein 1 at about $\frac{3}{4}$.

This moth was fairly common in Farquhar Island around bushes of *Tournefortia argentea*, on which the larvæ were found feeding.

The following is a description of the larva made on 7 October, 1905, from living Farquhar examples:—

Colour a creamy white with a slight tinge of yellow, particularly in intersegmental rings. Head black, with a creamy Λ mark. A pale yellow dorsal stripe. Tubercles i and iii faintly ringed with pale yellow. Legs black. Prolegs whitish; hooks on inner side of prolegs only, few in number (about 10), on a flange, reddish in colour; prolegs on third to sixth and tenth abdominal segments.

All tubercles are glossy black, being raised almost like warts above the smooth and glossy skin. Anterior (i) and posterior (ii) trapezoidals each bear a single black hair. The supraspiracular tubercle (iii) bears a single white hair. A postspiracular tubercle (iv) bears a white hair. A small black hairless prespiracular dot below (iii). Two black tubercles below the flange, the foremost bearing one white hair, the hindmost having two. A black spot at base of leg and proleg. (Plate 17. fig. 16.)

The larva seems to feed indifferently on the upper and under side of *Tournefortia* leaves, consuming halfway through the leaf, and leaving an unsightly brown patch usually starting from the edge and of quite irregular shape.

S. Providence.—Common on 3 October, 1905, on the *Tournefortia* bushes, and larvæ also found.

Of twelve specimens only five have the red markings developed at all, the range of this red-spotted variation being quite parallel to that in Farquhar examples. In the *lactea* form, however, there seems to be a greater development of the black spots in these specimens as compared with Farquhar examples, these spots forming a pattern

similar to that seen in *pulchelloides*, except for the absence or obsolescence of the black costal spot just before $\frac{1}{2}$ of the fore wing.

Marie Louise I.—A single worn specimen, collected in Marie Louise Island by Mr. Dupont.

Distribution.—Farquhar I.; Providence Group; Marie Louise I. (Amirantes); Assumption; Gloriosa; Aldabra.

It is interesting to note the extraordinary range of variation in the markings of this species. We have:—

- (a) The type-form *lactea*, in which the wing is pale creamy-white and practically unspotted.
- (b) A black-spotted form, in which the black markings of the usual *Utetheisa*-pattern are developed, but no red markings. This form seems to be predominant in South Providence, and may be distinguished as var. *nigrosignata*, var. n.
- (c) A red-spotted form or subspecies, in which the scarlet spots of the fore wing are strongly developed, the black spots being more or less obsolete. This form, which may be distinguished as *rubrosignata*, var. n., occurs rather sparingly with the type in Farquhar and South Providence, but is still more strongly marked in Gloriosa and Assumption, where it appears to quite replace the typical *lactea* form.
- (d) Examples from Aldabra in which both the red and black markings are strongly developed so as to give a superficial resemblance to *U. pulchelloides*, from which, however, this form is easily distinguishable by (i) the presence of a white patch in the black border at anterior angle of hind wing; (ii) the absence of any discoidal spot on hind wing; (iii) the unspotted cilia of fore wing. This form has hitherto only been found in Aldabra and I therefore name it *aldabrensis*, subsp. nov.

2. *Utetheisa pulchelloides*, Hmps. n.

Utetheisa pulchelloides, Hampson, A. M. N. H. (7) xix. (1907) p. 239.

Chagos.—Forty-three specimens from Salomon (Ile du Sel, Ile de la Passe, Ile Anglaise), Peros Banhos (Ile Diamant [type], Ile du Coin), and Diego Garcia. Found abundantly in all the Atolls.

In a few specimens, particularly those from Ile Anglaise, the black spots on the fore wing coalesce and form incomplete transverse bands; this tendency is very strongly marked in examples from the New Hebrides and Solomon Islands in the National Collection. In one specimen from Diego Garcia the black spots have combined to form a longitudinal striga.

The females seem to be more active on the wing than the males, and start up more readily as one approaches the bushes on which they are resting. At Diego Garcia on 12 June some specimens of this species were so active on the wing in the extremely hot midday sun that at first sight they appeared to be small Pierid butterflies.

The larvæ (Plate 17. fig. 15) were found feeding on the leaves of *Tournefortia argentea*.

Cargados Carajos.—Abundant in all stages at the end of August, the larvæ on *Tournefortia argentea*. The twenty-three examples in the present collection represent a flavescens form in which the usually red markings are of a pale yellow, probably a variation directly correlated with existence on a sandbank.

Coetivy.—Of fourteen specimens, ten have the usual red markings, but in four examples these spots are distinctly yellow as in the Cargados form.

Poivre.—Eleven examples, of which ten have the spots of a pale orange colour, similar to those of Cargados, and only one has these markings red, and even in this case the red is of a very dull shade.

D'Arros.—Three specimens from St. Joseph Island and thirteen from D'Arros. Of these only one from D'Arros has the typical red markings, and even in this case the red colour is very dull; in all the others the fore-wing spots are of a pale orange colour.

Ile Desroches.—Larvæ were found on *Tournefortia argentea*, but the moth was not common.

Eagle Island.—Ten specimens, of which only two have the typical red markings on the fore wing, and even in their cases the red colour is very dull. The other eight have these markings of a pale orange colour, similar to that seen in examples from Cargados.

Seychelles.—Thirteen specimens, all collected in La Digue during November 1905. All have typical red markings.

Distribution.—Seychelles (Praslin); Coetivy; Amirante Islands (Eagle, D'Arros, St. Joseph, Desroches, and Poivre); Cargados Carajos; Chagos Islands; Cocos-Keeling; Christmas Isd.; Ceylon; Singapore; Formosa; Loo-Choo Is.; New Guinea; North Australia; Solomon Is.; Gilbert Is.; Marshall Is.; Ellice Is. It seems to be almost everywhere an insular form.

3. *Utetheisa pulchella*, Linn.

Tinea pulchella, Linn., Syst. Nat. (ed. x.) p. 534.

Euchelia pulchella, Boisd., Faun. Mad. Maur. p. 85.

Deiopeia pulchella, Guenée, Maill. Réunion, Lép. p. 24.

Utetheisa pulchella (partim), Saalm. Lep. Madag. p. 159; Hampson, Moths Ind. ii. p. 55 (fig.); ? Joannis, Ann. Soc. Ent. France, 1894, p. 430; ? Holland, Proc. U.S. Nat. Mus. 1895, p. 270 (Mahé); Hampson, Cat. Phal. iii. p. 483*.

Utetheisa pulchella, Hampson, A. M. N. H. (7) xix. (1907) p. 240.

Seychelles.—Eight specimens; of these, four were taken in St. Anne Island on 26 October, 1905, and four are from Mr. de Gaye's collection and also from St. Anne Island.

I assume that Dr. Abbott's specimens recorded by Holland as *pulchella* from

* Before I drew attention to the fold and tuft on the hind wing of *U. pulchelloides* this latter species had always been confused with *pulchella*; hence it is often extremely difficult to ascertain, in the case of many of these earlier records, which species is really intended to be referred to.

Gloriosa, Poivre I., and Platte I. are really *pulchelloides*, and those from Aldabra are probably *U. lactea aldabrensis*.

Distribution.—C. and S. Europe; throughout mainland of Africa and Asia; Mauritius Sokotra; Seychelles; Ceylon; Nicobars; Java; New Guinea, Port Moresby; N. S. Wales; Tasmania; Fiji.

4. *Utetheisa elata*, Fb.

Noctua elata, Fabr., Ent. Syst. p. 440.

Utetheisa venusta, Hübn., Zütr. iii. p. 29, ff. 521, 522; Hampson, Moths Ind. ii. p. 55.

Euchelia formosa, Boisd., Faun. Mad. Maur. p. 85.

Deiopeia diva, Mabille, Ann. S. E. France, 1879, p. 305.

Utetheisa elata, Hampson, Cat. Phal. iii. p. 480, f. 215.

Seychelles.—Three specimens of type *elata* from Mahé (*de Gaye*); the typical form is only found at Barbarons, on the west side of Mahé at about 200 feet elevation. Seven examples of ab. *diva*, Mab., all from Cascade Estate, Mahé, on various dates between 18 September and 1 December, 1905; the moth appears to be very local and occurs at about 1000 feet elevation on the edge of the ancient forest.

Larvæ were found at Cascade Estate on 2 November, 1905, feeding on the leaves of *Tournefortia sarmentosa*, Lam., but owing to our departure from the Seychelles and consequent inability to obtain a fresh supply of the food-plant, I was unable to breed out the moth. The larva is shown on Plate 17. fig. 17.

Distribution.—(Form *elata*) Mauritius; Madagascar; Johanna I.; Seychelles (Mahé). (Form *diva*) Seychelles (Mahé).

Family Noctuidæ.

5. *Chloridea armigera*, Hb.

Heliothis armigera, Hübn., Noct. t. 79. f. 370; Boisd. Faun. Mad. Manr. p. 98.

Chloridea armigera, Hampson, Cat. Phal. iv. p. 45, f. 18.

Coetivy.—Two specimens. Fairly common in September.

South Providence.—One example reared (21 October, 1905) from larva found on "Bois balais" (*Erythroxyton* sp.). These larvæ were cannibalistic; I collected four or five, but this solitary survivor devoured all the others.

Distribution.—Texas; California; Mexico; Guatemala; Jamaica; Barbados; St. Vincent (W. I.); Venezuela; Brazil; Peru; Chile; Argentina; Cape Verde Is.; S. Europe; Madeira; Canaries; throughout Africa to Syria and Aden; St. Helena; Rodriguez; Réunion; Mauritius; Madagascar; S. Providence; Coetivy; throughout India; Ceylon; Singapore; Java; China; Formosa; Japan; throughout Australia; Tasmania; New Zealand; Gilbert Is.; Sandwich Is.

6. *Cirphis leucosticha*, Hmps.

Cirphis leucosticha, Hampson, Cat. Phal. v. p. 541 (1905).

Leucania insulicola, Saalm. (nec Guen.), Lep. Madag. p. 254, f. 181 (1891).

Seychelles.—A single worn female from Praslin, November 1905.

Distribution.—Br. E. Africa; Natal; Mauritius; Madagascar (Nossi-Bé); Seychelles (Praslin).

7. *Eriopus maillardi*, Gn.

Eriopus maillardi, Guenée in Lep. of Maillard's 'Notes sur l'Ile de la Réunion,' p. 39, t. 22. f. 8 (1863); Hampson, Cat. Phal. vii. p. 551 (fig.).

Calloplistria recurvata, Moore, Lep. Atk. p. 144 (1882); Moore, Lep. Ceylon, iii. p. 60, t. 151. f. 1; Hampson, Moths India, ii. p. 257.

Chagos.—Five specimens from Salomon Atoll only. Of these two were bred from larvæ found on *Asplenium nidus* in Ile de la Passe on 22 June.

Coetivy.—Two worn examples.

Seychelles.—Two specimens, one from Frigate Island (*Connor*), the other from Round Island (*de Gaye*). The Frigate Island specimen is very dark, with the usually light markings inconspicuous, but does not seem separable from *E. maillardi*.

Distribution—Sierra Leone; Natal; Réunion; Mauritius; Coetivy; Seychelles; Sokotra; throughout India; Ceylon; Singapore; Hongkong; Java; New Guinea; Trobriand Is.; Fiji; Samoa.

It is noteworthy that this species is not recorded from Madagascar, the Maldives, or Christmas Island.

8. *Spodoptera mauritia*, Bdv.

Hadena mauritia, Boisd., Faun. Mad. Maur. p. 92, t. 13. f. 9 (1833).

Spodoptera mauritia, Hampson, Moths Ind. ii. p. 248, f. 140; Joannis, Ann. S. E. France, 1894, p. 432.

Seychelles.—Five specimens: two from Frigate Island (*Connor*); two from Mr. de Gaye's collection from Mahé; one received from Mr. de Gaye labelled "Mahé, sea-level, 20 March, 1906."

Distribution.—Lagos; N. Nigeria; Mashonaland; Natal; B. E. Africa; Réunion; Mauritius; Madagascar; Seychelles (Mahé, Frigate I.); Sokotra; throughout India; Burma; Ceylon; Cocos-Keeling Is.; N. Guinea; Port Darwin; Queensland; Marquesas Is.; Hawaii.

9. *Spodoptera abyssinia*, Gn.

Spodoptera abyssinia, Gueuée, Noct. i. p. 254.

Spodoptera cilium, Hampson, Moths India, ii. p. 259.

Caradrina orbicularis, Hampson, Nat. Hist. Sokotra, p. 323, t. 20. f. 26.

Seychelles.—Three worn examples from Mr. de Gaye's collection (Mahé).

Distribution.—Lagos; S. Nigeria; Mashonaland; E. Transvaal; Natal; Mauritius; Seychelles (Mahé); Sokotra; throughout India; Ceylon; Philippines.

10. *Prodenia littoralis*, Bdv.

Prodenia littoralis, Boisd., Faun. Mad. Maur. p. 91, t. 13. f. 8 (1833); Moore, Lep. Ceylon, iii. t. 146. ff. 1 a-b (larva); Hampson, Moths India, ii. p. 248, f. 139; Saalm., Lep. Madag. p. 267 (1891).

Hadena retina, Guenée, Maill. Réunion., Lép. p. 35 (1863).

Chagos.—Five examples: one from Salomon Atoll, two from Ile Yéyé (Peros Banhos), one from Ile du Coin (Peros Banhos) on 25 June, and one bred from a larva found on "Rougette" in Diego Garcia on 23 July. The larva was noted as olive-brown in colour, with a large yellow ocellus on meta- and mesothoracic segments.

Seychelles.—One female collected by Mr. J. A. de Gaye.

Distribution.—Porto Rico; Crete; Asia Minor; Madeira; throughout Africa; St. Helena; Ascension I.; Rodriguez; Mauritius; Bourbon; Madagascar; Seychelles; throughout India and Ceylon; Chagos; Cocos-Keeling I.; Sumatra; Christmas I.; Java; Celebes; Philippines; Aru Is.; Amboina; Australia; Viti; Marshall Is.

11. *Perigea capensis*, Gn.

Apamea capensis, Guenée, Noct. i. p. 213.

Caradrina conducta, Wlk., Cat. x. p. 296.

Eupteria conducta, Hampson, Moths Ind. ii. p. 211.

Perigea conducta, Joannis, Ann. S. E. France, 1894, p. 432.

Perigea centralis, Moore (nec Wlk.), Lep. Ceylon, iii. p. 28, t. 147. ff. 2, 2 a (larva).

Perigea meleagris, Saalm., Lep. Madag. p. 271, f. 228 (1891).

Perigea capensis, Hampson, Cat. Phal. vii. p. 332, t. 116. f. 20 (1908).

Seychelles.—One very worn example from Cascade Estate, Mahé (800 feet), on 18 September, 1905.

Distribution.—Throughout Africa; St. Helena; Mauritius; Madagascar; Seychelles (Mahé); Sokotra; Aden; throughout India; Burma; Assam; W., C., and S.E. China; Philippines; Borneo; Formosa; Ceylon; Andamans; Perak; Singapore; Java; Br. New Guinea; Solomon Is.; Marshall Is.; Fiji; Queensland.

12. *Chasmina sericea*, Hmps. n.

Leocyma sericea, Hampson, Ill. Het. ix. p. 92, t. 161. f. 7; Moths India, ii. p. 289, f. 158.

? *Leocyma vestæ*, Joannis (nec Guen.), Ann. S. E. France, 1894, p. 433.

Seychelles.—Five specimens: one female from Mr. de Gaye's collection, taken in October in Mahé; one female, Mahé (*Dupont*); one male, two females, Praslin, November 1905.

The presence of the single male specimen enables me to identify this species as *sericea*. I have no doubt that the examples recorded by M. de Joannis as *vestæ* were all females, in which sex *vestæ* is indistinguishable from *sericea*.

Distribution.—Seychelles (Mahé, Praslin); Ceylon; Maldives; Rangoon; Cocos-Keeling Is.; Christmas I.; Formosa; New Caledonia; Funafuti. It is noteworthy that this species is essentially the insular representative of its genus.

13. *Amyna octo*, Gn.

Perigea octo, Guenée, Noct. i. 233.

Amyna octo, Hampson, Moths Ind. ii. 251, f. 142; Pag., Lep.-Het. Madag. p. 104.

Ilattia octo, Joannis, Ann. S. E. Fr. 1894, p. 432; Holland, Proc. U.S. Nat. Mus. 1895, p. 271.

Coetivy.—Two examples, September 1905.

Seychelles.—Eight specimens from Mahé, Praslin, and Frigate Island. This short series shows great variability in the conspicuousness of the discal spot of the fore wing, this spot varying from obsolescence to very sharp definition in pure white.

Distribution.—The range of this species is practically world-wide, one result of this fact being that it has at various times been placed in about a dozen different genera, and has received upwards of twice that number of specific names.

Some localities are :—Mexico; Grenada; Jamaica; Amazons; Paraguay; Argentina; throughout W., C., S., and E. Africa to Sokotra; Rodriguez; Madagascar; Coetivy; Seychelles; throughout India; Ceylon; Andamans; throughout China to Amurland; Christmas I.; N. Australia; Queensland; N. S. Wales; Solomon Is.; New Hebrides; Gilbert Is.; Fiji; Ellice Is.; Cook Is.; Tahiti; Marquesas.

14. *Eutelia inextricata*, Moore.

Eutelia inextricata, Moore, Lep. Atk. p. 147; Hampson, Moths India, ii. 395.

Seychelles.—One male, Mahé (*de Gaye*); bred from a larva found at Port Victoria.

Distribution.—Seychelles (Mahé); N. India; Assam; Ceylon; N. China; Japan.

15. *Stictoptera pæcilosoma*, Saalm.

Steiria pæcilosoma, Saalm., Lep. Madag. p. 491, ff. 99 ♀, 120 ♂.

Seychelles.—One female in very bad state from Mahé (*de Gaye*).

Distribution.—Madagascar (Nossi-Bé); Seychelles (Mahé).

16. *Asinduma nesta*, sp. n. (Plate 17. fig. 1.)

♂. Expanse 22 mm. Head grey; frons sprinkled with fuscous. Palpi greyish fuscous, lighter beneath; upturned; second joint long and thickly scaled, third joint short and lightly scaled, not reaching vertex. Haustellum well developed, naked. Antennæ finely ciliated (over 1). Thorax and abdomen greyish sprinkled with fuscous; abdomen with lateral hair-pencils anally. Legs pale grey irrorated with fuscous on fore femora and posterior tibiæ and tarsi.

Fore wing grey; costa irrorated with dark fuscous from base to $\frac{2}{3}$; an ill-defined sub-basal blackish patch from costa to median nervure; beyond this a whitish patch bounded exteriorly by a narrow sinuous outwardly-oblique black bar from costa at $\frac{1}{3}$ to vein 2 (submedian nervure); orbicular spot tinged with yellow and margined by blackish scales, less apparent on terminal edge; a whitish line, preceded on costa by a short black line, runs obliquely inwards from costa at $\frac{2}{3}$, is then abruptly angled outwards along vein 8, and is then sharply retraced sinuously to inner margin, being edged exteriorly with blackish between veins 7 and 3; a longitudinal patch of pale grey suffusion occupies the apical

third of costa; below this a }-shaped fuscous shade runs into inner margin near tornus; terminal margin suffused with brown apically; termen indicated in blackish around tornus. Cilia dark grey, paler marginally and opposite terminations of nervures.

Hind wing hyaline white, lightly margined with fuscous on outer margin towards and at apex, and with terminations of veins 2 to 8 indicated in fuscous. Cilia whitish grey suffused with fuscous around apex.

S. Providence.—A single specimen beaten from "Bois balais" (*Erythroxyton* sp.) on 3 October, 1905.

Observation.—In generic position the above species is apparently most closely related to *Asinduma ræderi*, Stndf., but the short palpi of both these species seem to necessitate their transference into a new genus.

17. *Acontia malva*, Esp.

Acontia malva, Esp., Schmett. iv. 2. p. 63, t. 195. f. 4; Hampson, Moths Ind. ii. 322.

Eagle I.—One male example, 17 October, 1905.

Distribution.—S. Europe; W., S., and E. Africa; Amirantes (Eagle I.); Sokotra; India; Burma; Ceylon; Formosa.

18. *Ophiusa honesta*, Hb.

Noctua honesta, Hübn., Samm. Exot. ii. Index, p. 4, t. 203. figs. 1, 2.

Ophiusa honesta, Hampson, Moths India, ii. p. 504.

Chagos.—A single specimen from Ile Diamant (Peros Banhos), 19 May. This was started up out of herbage at the foot of a coco-palm into which it flew high up and quite out of reach, so that I was obliged to bring it down with a shot-gun; there is, however, sufficient of the moth left to be certain of its identity.

Distribution.—N. India to Bombay; Burma; Andamans; Chagos; Ceylon; Christmas Island; Singapore; Manila.

19. *Ophiusa melicerte*, Drury.

Phalena melicerte, Drury, Ill. Exot. Ins. i. 46, t. 23. f. 1.

Ophiusa melicerte, Moore, Lep. Ceylon, iii. t. 168. ff. 2-2*b* (larva); Hampson, Moths Ind. ii. p. 494; Pag., Lep.-Het. Madag. p. 116.

Achæa melicerta, Joannis, Ann. S. E. France, 1894, p. 433.

Achæa melicerte, Semper, Schmett. Philipp. ii. t. S. ff. 1, 2 (larva, pupa).

Seychelles.—Five specimens, of which two are from Praslin in November 1905, the other three from Mahé.

Distribution.—Throughout Africa to Aden and Sokotra; St. Helena; Rodriguez; Madagascar; Seychelles (Mahé, Praslin); throughout India; Burma; Assam; Ceylon; Cocos-Keeling Is.; Christmas I.; Java; Singapore; Port Darwin; Queensland; Philippines; Gilbert Is.; Ellice Is.; Marshall Is.; Marquesas; Tahiti.

20. *Ophiusa algira*, Gmel.

Noctua algira, Gmelin, Linn. Syst. Nat. i. p. 2547.

Ophiusa algira, Hampson, Moths India, ii. p. 500, f. 280; Pag., Lep.-Het. Madag. p. 116.

Seychelles.—Two specimens; one collected at Cascade Estate, Mahé, in November 1905; the other received from Mr. J. A. de Gaye without exact data, but probably from Mahé.

Distribution.—South Europe to Syria; W. Africa; Aden; White Nile; Rhodesia; Mashonaland; Transvaal; Natal; Br. E. Africa; Mauritius; Rodriguez; Madagascar; Gloriosa; Seychelles (Mahé); throughout India; Burma to China and Japan; Ceylon.

21. *Ophiusa angularis*, Bdv.

Ophiusa angularis, Boisd., Faun. Mad. Maur. p. 103, t. 13. f. 2; Joannis, Ann. S. E. Fr. 1894, p. 433; Pag., Lep.-Het. Madag. p. 119.

Seychelles.—Five specimens, all from Mahé.

Distribution.—Mashonaland; Transvaal; Natal; Br. E. Africa; Mauritius; Madagascar; Seychelles (Mahé).

22. *Dragana pansalis*, Wlk.

Dragana pansalis, Walk., Cat. xvi. 200; Hampson, Ill. Het. ix. t. 167. f. 3; Joannis, Ann. S. E. Fr. 1894, p. 434, t. 15. ff. 3, 3 a.

Acantholipes pansalis, Hampson, Moths Ind. ii. 524.

Seychelles.—Ten specimens (3 ♂, 7 ♀), of which seven are from Mahé and three from Praslin.

Distribution.—Sierra Leone; Lagos; Seychelles; throughout India; Ceylon; Andamans; Nicobars; Singapore; Formosa; Java; Borneo; Thursday I.

23. *Remigia repanda*, Fb.

Noctua repanda, Fab., Ent. Syst. iii (2) p. 49 (1792).

Ophiusa repanda, Boisd., Faun. Mad. Manr. p. 107, t. 13. f. 3 (1833).

Remigia latipes, Guenée, Spec. Gén. vii. p. 314 (1852); Guenée, Maill. Réunion, Lép. p. 52 (1863); Joannis, Ann. Soc. Ent. Fr. 1894, p. 433; Pag., Lep.-Het. Madag. p. 120 (1907).

Remigia repanda, Hampson, A. M. N. H. (8) i. pp. 474, 476, 485 (1908).

Remigia conveniens, Walk. Cat. xiv. p. 1507; Holland, Proc. U.S. N. Mus. 1895, p. 273.

Poivre.—A single specimen. Amongst long grass, 10 October, 1905.

Seychelles.—Nineteen specimens from Mahé and Praslin.

Distribution.—Panama and Jamaica to Argentina; S. Trinidad; W., C., E., and S. Africa; Mauritius; Réunion; Rodriguez; Madagascar; Comoro Is.; Poivre (Amirantes); Seychelles (Mahé, Praslin, Félicité); Aden.

24. *Remigia frugalis*, Fb.

Noctua frugalis, Fab., Syst. Ent. vi. p. 601.

Remigia frugalis, Guenée, Maill. Réunion, Lép. p. 52; Moore, Lep. Ceylon, iii. t. 172. ff. 4, 4 a (larva); Saalm., Lep. Madag. p. 472, ff. 220, 221; Hampson, Moths India, ii. p. 527; Semper, Schmett Philipp. ii. t. T. f. 2 (larva); Hampson, A. M. N. H. (8) i. p. 476 (1908).

Chagos.—Two specimens (1 ♂, 1 ♀) taken on 7 July at Minni-Minni (Diego Garcia).

Farquhar I.—One male taken on 30 September. This moth was noted as fairly common here in damp grassy places.

Distribution.—Old Calabar; Congo; Aden; Nyasaland; Natal; Réunion; Mauritius; Madagascar; Farquhar I.; Mayotta; throughout India; Assam; Burma; Ceylon; Andamans; Nicobars; Singapore; Java; Cocos-Keeling; Chagos; Thursday I.; New Guinea; Celebes; Borneo; Queensland; Fiji; Tahiti; Carolines; Gilbert Is.; Marshall Is.; Ellice Is.

25. *Remigia undata*, Fb.

Noctua undata, Fab., Syst. Ent. vi. p. 600.

Noctua archesia, Cram., Pap. Exot. iii. t. 273. ff. F, G.

Ophiusa mayeri, Boisd., Faun. Mad. Maur. p. 194.

Remigia mayeri, Guenée, Maill. Réunion, Lép. p. 53; Joannis, Ann. Soc. Ent. France, 1894, p. 433.

Remigia archesia, Moore, Lep. Ceylon, iii. t. 172. ff. 3, 3 a (larva); Saalm., Lep. Madag. p. 472, ff. 219 ♂, 152 ♀; Hampson, Moths Ind. ii. p. 526 (fig.); Pag., Lep.-Het. Madag. p. 119.

Cauninda archesia, Semper, Schmett. Philipp. ii. t. T. f. 1 (larva).

Remigia undata, Hampson, A. M. N. H. (8) i. pp. 476, 485 (1908).

Seychelles.—Thirty-five specimens from Mahé, St. Anne, and Praslin. The species is very variable throughout its range both in ground-colour and markings, but the varieties do not appear to fall into any geographical races.

Distribution.—W., C., S., and E. Africa; Mauritius; Madagascar; Comoro Is. (Mayotta); Seychelles (Mahé, St. Anne, Praslin, Félicité); throughout India; Burma; Assam; Ceylon; Andamans; Nicobars; Selangor; Singapore; Java; Nias; throughout China; Hainan; Japan; Formosa; Philippines; Solomon Is.; Navigators' Is.; New Guinea; Marquesas; Tahiti; Tonga.

26. *Grammodes geometrica*, Fb.

Noctua geometrica, Fab., Syst. Ent. p. 599.

Phalena ammonia, Cram., Pap. Exot. iii. t. 250. f. D.

Grammodes geometrica, Hampson, Moths Ind. ii. p. 531, f. 296; Pag., Lep.-Het. Madag. p. 120 (1907).

Grammodes bifasciata, Joannis, Ann. Soc. Ent. Fr. 1894, p. 433.

Farquhar I.—One specimen bred on 28 October, 1905, from a pupa found under a log in North Island on the 1st of the month. This pupa was lying on the ground, without any web.

Seychelles.—Two specimens: one from Praslin in November 1905; the other from St. Anne I. on 29 December, 1906 (*de Gaye*).

Distribution.—S. Europe; throughout Africa; Madagascar; Comoros; Farquhar I.; Seychelles (Mahé, St. Anne, Praslin, La Digue); throughout India; Burma; Ceylon; W. China; Formosa; Singapore; Pulo Lant; Java; Queensland.

27. *Grammodes stolidi*, Fb.

Noctua stolidi, Fab., Syst. Ent. p. 599.

Grammodes stolidi, Hampson, Moths Ind. ii. p. 532; Holland, Proc. U.S. Nat. Mus. 1895, p. 271; Pag., Lep.-Het. Madag. p. 121 (1907).

Coetivy.—One specimen, 10 September, 1905. Found in dry grassy places, but not common.

Distribution.—Dalmatia; Greece; Syria; Sierra Leone; Congo; Abyssinia; Aden; Kilimanjaro; Uganda; B. E. Africa; Natal; Basutoland; Cape Colony; Madagascar; Coetivy; Seychelles (Platte I.); India (Karachi to Madras); Lower Burma.

28. *Grammodes delta*, Bdv.

Ophiusa delta, Boisd., Faun. Mad. Maur. p. 105, t. 13. f. 1 (1833).

Grammodes delta, Guenée, Maill. Réunion, Lép. p. 52 (1863); Pag., Lep.-Het. Madag. p. 121 (1907); Hampson, A. M. N. H. (8) i. (1908) p. 483.

D'Arros.—A single specimen taken on 13 October, 1905, amongst dry grass under coco-palms.

Distribution.—Transvaal; Mashonaland; N'Gami Land; B. E. Africa (Taveta, Tanga); Zanzibar; Mauritius; Madagascar; Aldabra; D'Arros I. (Amirantes).

29. *Chalciope hyppasia*, Cram.

Noctua hyppasia, Cram., Pap. Exot. ii. t. 250. f. E.

Ophiusa anfractuosa, Boisd., Faun. Mad. Maur. p. 104, t. 15. f. 6.

Trigonodes hyppasia, Hampson, Moths Ind. ii. p. 527; Joannis, Ann. S. E. France, 1894, p. 433; Pag., Lep.-Het. Madag. p. 120 (1907).

Chalciope hyppasia, Hampson, A. M. N. H. (8) i. (1908) pp. 476, 483, 484.

Seychelles.—Sixteen specimens from Mahé, St. Anne, Praslin, and Frigate Island.

Distribution.—W., C., S., and E. Africa; Abyssinia; Aden; Mauritius; Rodriguez; Réunion; Madagascar; Comoro Is.; Gloriosa; Seychelles (Mahé, St. Anne, Praslin, Felicité, Cerf); throughout India; Burma to China; Ceylon; Java; Australasia.

30. *Plusia chalcytes*, Esp.

Plusia chalcytes, Esper, Schmett. t. 141. f. 3 (1789); Saalm., Lep. Madag. p. 391.

Plusia chalcysitis, Boisd., Faun. Mad. Maur. p. 95.

Plusia eriosoma, Hampson, Moths India, ii. p. 569 (fig.).

Chagos.—One very worn example collected in Egmont Atoll, on Ile Sipaille, where several were seen under "mapou" trees (*Pisonia Calpidia*).

Coetivy.—Eight specimens of a rather pale-coloured form in which the metallic spots of the fore wing are nearly or quite touching one another.

Farquhar I.—Examples were seen but not captured.

South Providence.—Eleven specimens, in four of which the two metallic spots of fore wing are conjoined. In all cases the ground-colour of the wings is very pale. Larva on *Scævola Kænigii*; pupa in a dense white web on underside of *Scævola* leaves.

Poivre.—A single specimen found dead in a spider's web. The two metallic spots of fore wing are touching and the general ground-colour is very pale as in the South Providence form.

D'Arros.—One empty pupa on *Scævola Kænigii*.

Desroches.—Several moths seen but not captured.

Eagle I.—Only a single specimen, although the moth was noted as common. The ground-colour is very pale, but the metallic spots are separate.

Seychelles.—Five specimens, all from Mahé.

The form with conjoined metallic spots on the fore wing seems to occur occasionally throughout the range of the species, but attains an unusually large proportion in these low-lying coral islands.

Distribution.—This moth has been recorded, under about a dozen different names, from practically the whole of the warmer regions of the world. Its range extends from Florida and Bermuda through Central America to Brazil and the West Indies; throughout the south of Europe to Syria; throughout the whole of Africa; Teneriffe; St. Helena; Mauritius; Réunion; Madagascar; Farquhar I.; South Providence I.; Amirante Is. (Poivre, D'Arros, Desroches, Eagle); Coetivy; Seychelles; Sokotra; Aden; N.W. India to Ceylon; Upper Burma; Java; Cocos-Keeling Is.; Chagos; throughout China to Japan and the Philippines; Borneo; North Australia to New Zealand; Fergusson I.; Tonga; Society Is.; Marquesas; Sandwich Is.

31. *Plusia signata*, Fb.

Noctua signata, Fab., Ent. Syst. iii. 2, p. 81.

Plusia signata, Guenée, Maill. Réunion., Léop. p. 41; Saalm., Lep. Madag. p. 391; Hampson, Moths Ind. ii. p. 568; Joannis, Ann. S. E. France, 1894, p. 433.

The present collection contains no specimens, but this species was received from the Seychelles by M. de Joannis.

Distribution.—W. Africa; Natal; Réunion; Mauritius; Madagascar (Nossi-Bé); Seychelles (Mahé); Burma; Ichang; S. India; Ceylon; Java; Fiji.

32. *Plusia limbirena*, Gn.

Plusia limbirena, Guenée, Noct. ii. p. 350; Moore, Lep. Ceylon, iii. t. 152. f. 5; Guenée, Maill. Réunion., Léop. p. 41; Hampson, Moths Ind. ii. p. 568; Joannis, Ann. S. E. France, 1894, p. 433; Saalm., Lep. Madag. p. 394.

Seychelles.—One specimen from Mahé.

Distribution.—St. Helena; Delagoa Bay; Mashonaland; Natal; Br. E. Africa; Réunion; Mauritius; Madagascar; Seychelles (Mahé); Aden; N.W. Himalayas; Sikhim; Nilgiris; Ceylon.

33. *Azazia rubricans*, Bdv.

Ophiusa rubricans, Boisd., Faun. Mad. Maur. p. 106, t. 16. f. 1 (1833).

Thermesia rubricans, Guenée, Maill. Réunion., Léop. p. 53; Pag., Lep.-Het. Madag. p. 122.

Azazia rubricans Hampson, Moths Ind. ii. p. 534, f. 298; Joannis, Ann. S. E. France, 1894, p. 433.

Seychelles.—Eight specimens; from Mahé, Praslin, St. Anne, and Frigate I. Of these, seven belong to the yellowish form (*transducta*, Wlk.), and only one to the fuscous form.

Distribution.—Throughout Africa; Madagascar; Comoro Is.; Seychelles (Mahé,

Praslin, St. Anne, Frigate I.); throughout India; Burma; Ceylon; Andamans; Nicobars; Christmas I.; Java; Borneo; Formosa; Solomon Is.; Aru; Marquesas; Navigators' Is.; Tahiti; Tonga; Fiji.

34. *Hypospila thermesina*, Gn.

Hypospila thermesina, Guenée, Maill. Réunion, Léop. p. 53 (1863); Joannis, Bull. Soc. Ent. France, 1899, p. 199.

Hypospila bolinoides, Joannis (nec Guenée), Ann. S. E. France, 1894, p. 433, t. 15. ff. 5, 5 a.

The present collection contains no specimens.

Distribution.—Réunion; Seychelles (Mahé).

35. *Cosmophila erosa*, Hb.

Noctua erosa, Hübn., Zutr. ii. p. 19, figs. 287, 288.

Cosmophila xanthindyma, Boisd., Faun. Mad. Maur. p. 94, t. 13. f. 7 (1833); Moore, Lep. Ceylon, iii. t. 155. ff. 1-1^b (larva); Guenée, Maill. Réunion, Léop. p. 44; Joannis, Ann. Soc. Ent. France, 1894, p. 433.

Cosmophila erosa, Saalm., Lep. Madag. p. 407; Hampson, Moths India, ii. p. 411.

Chagos.—One worn specimen from Salomon.

Seychelles.—Three: two collected in Mahé during November 1905, the third from Mr. de Gaye's collection.

Distribution.—Alabama; Mexico; West Indies and Cuba; São Paulo; Argentina; Paraguay; W. Africa; Aseension I.; St. Helena; throughout S. Africa; E. Africa; Rodriguez; Réunion; Mauritius; Madagascar; Seychelles; Aden; Sokotra; throughout S. and E. Asia to Japan; Formosa; Philippines; Andamans; Chagos; Christmas I.; Solomon Is.; Gilbert Is.; Marquesas; Viti Is.; Queensland to S.E. Australia.

36. *Eublemma rivula*, Moore.

Thalpocharis rivula, Moore, Lep. Atk. p. 140.

Micra chalybea, Swinh., P. Z. S. 1884, p. 518, t. 47. f. 10.

Eublemma rivula, Hampson, Moths Ind. ii. p. 341; Joannis, Bull. Soc. Ent. France, 1899, p. 197.

Farquhar I.—Fifteen specimens, 30 September and 1 October, 1905; locally abundant in North Island.

Distribution.—N'Gami Country; Transvaal; Natal; Farquhar I.; Mahé (Seychelles); Calcutta; Nilgiris; E. and S. Australia.

37. *Eublemma ragusana*, Frr.

Eublemma ragusana, Freyer, Neue Beitr. v. p. 92; Hampson, Moths India, ii. p. 339, iv. p. 516.

Coetivy.—One specimen, 24 September, 1905, amongst grass &c. in a dry place under coco-palms.

Distribution.—Syria; Nigeria; B. E. Africa; Mashonaland; Transvaal; Natal; throughout India; Burma; Ceylon; Andamans; Java; New Guinea; Queensland.

This species does not seem to have been recorded previously from any of the islands in the Indian Ocean.

38. *Tarache zelleri*, Wlgn.

Tarache zelleri, Wallengren, Antekn. i. Zool. p. 59 (1856).

Farquhar I.—Two specimens on 30 September, 1905. One of these has a much darker ground-colour than typical *T. zelleri*, but does not appear to differ specifically.

Distribution.—Acera; Kumasi; Yorubaland; E. Africa; Gazaland; Transvaal; Zululand; Natal; Farquhar I.

39. *Magulaba mæstalis*, Wlk.

Magulaba mæstalis, Walk., Cat. xxxiv. p. 1127.

Hingula figurata, Moore, Lep. Ceylon, iii. p. 199, t. 174. f. 10.

Raparna imparata, Hampson, Moths Ind. iii. p. 26 (partim); Joannis, Bull. Soc. Ent. France, 1899, p. 197.

Seychelles.—Nineteen specimens: from Mahé, St. Anne, and Praslin. Common in shady places, resting amongst dead leaves; occurs from sea-level up to the slopes of Morne Seychellois.

Distribution.—Sierra Leone; N.W. Nigeria; Mashonaland; Transvaal; B. E. Africa; Seychelles (Mahé, St. Anne, Praslin); Allahabad; Nilgiris; Ceylon; Borneo; Korea; Japan.

40. *Simplicia* sp. (? *inflexalis*, Gn.).

Seychelles.—One very worn and almost scaleless specimen from Praslin, in November 1905, may be referred with certainty to the genus *Simplicia*, and is probably *S. inflexalis*, Gn., which is widely spread from S. Africa to India.

41. *Hypena longipalpalis*, Gn.

Hypena longipalpalis, Guenée, Maill. Réunion, Léop. p. 57 (1863); Joannis, Ann. S. E. France, 1894, p. 434.

Received by M. de Joannis from Mahé, but I have seen no specimens.

Distribution.—Réunion; Seychelles (Mahé).

42. *Hypena* sp.

Seychelles.—One specimen from Frigate Island (*Connor*). It is quite scaleless and can only be referred to its generic position. In structure of palpi &c. it appears to be similar to a specimen of *Hypena strigata*, Fb. (*abyssinialis*, Gn.), taken in Mauritius (Petite Rivière, 18 August, 1905).

43. *Hypena masurialis*, Gn.

Hypena masurialis, Guenée, Delt. et Pyr. p. 38; Hampson, Moths Ind. iii. p. 79; Pag., Lep.-Het. Madag. p. 124.

Hypena obacerralis, Walk., Cat. xvi. p. 53; Moore, Lep. Ceylon, iii. t. 175. f. 5.

Coetivy.—Four specimens in September 1905.

Seychelles.—Two specimens; one from Frigate Island (*Connor*), the other from Praslin, November 1905.

Distribution.—Aden; Abyssinia; Congo; Sierra Leone; Lagos; Kumasi; Teneriffe; Transvaal; Mashonaland; Natal; B. E. Africa; Madagascar; Coctivy; Seychelles; Sokotra; throughout India; Ceylon; Brisbane; Fiji.

44. *Ophiuche conscitalis*, Wlk.

Ophiuche conscitalis, Walk., Cat. xxxiv. p. 1509; Saalm., Lep. Madag. p. 483, f. 139.

Hypena conscitalis, Hampson, Moths Ind. iii. p. 80; Joannis, Ann. Soc. Ent. France, 1894, p. 434; Hampson, A. M. N. H. (8) i. (1908) p. 485.

Seychelles.—Seven specimens: two from Frigate Island (*Connor*), four from Praslin, November 1905, one from Mahé (*de Gaye*).

Distribution.—Sierra Leone; N.W. Nigeria; Madagascar (Nossi-Bé); Réunion; Seychelles (Mahé, Praslin, Frigate I.); throughout India; Ceylon; Java; Queensland; S.E. Australia.

45. *Hydrillodes* sp.

Seychelles.—Four specimens: three from Praslin in November 1905, and one from Mahé (*Dupont*). Of these only the last has any pattern remaining on the wings, and this specimen has a lighter median bar across the fore wing, which does not seem to be normal.

In pattern of markings and general coloration this species comes closest to *H. nilgiriensis*, but structurally it seems to fall into Section II A. of Hampson's classification (Moths India, iii. p. 55), the male antenna having very long ciliations, but the fore wing without a very large tuft on underside of costa.

This moth is almost certainly a new species, but I refrain from describing it as such from the poor material before me.

46. *Hyblæa puera*, Cram.

Noctua puera, Cram., Pap. Exot. t. 103. ff. D, E.

Heliothis apricans, Boisd., Fauv. Mad. Maur. p. 98, t. 15. f. 7.

Hyblæa puera, Saalm., Lep. Madag. p. 407; Hampson, Moths India, ii. p. 371, f. 204; Joannis, Ann. S. E. France, 1894, p. 433; Semper, Schmett. Philipp. ii. t. Q. ff. 15-17 (larva, pupa); Pag., Lep.-Hct. Madag. p. 123.

Seychelles.—Two specimens: one from Mahé (*de Gaye*), the other taken in Praslin, November 1905.

Distribution.—Mexico; Honduras; W. Indies; N'Gami Country; Transvaal; Delagoa Bay; Br. E. Africa; Rodriguez; Mauritius; Madagascar; Seychelles (Mahé, Praslin); Aden; throughout India; Burma; Assam; Ceylon; Maldives; W. China; Loo-Choo Is.; Java; New Guinea; Trobriand I.

Family **Hypsidæ.**47. *Hypsa subretracta*, Wlk.

Hypsa subretracta, Walk., Cat. vii. p. 1676.

Pseudohypsa subretracta, Joannis, Ann. S. E. France, 1894, p. 430.

Seychelles.—Joannis has recorded a single female as collected in Mahé. I have not seen or heard of any other examples from the Seychelles.

Distribution.—Sierra Leone; S. Nigeria; Uganda; Natal; Cape Colony; Seychelles (Mahé).

48. *Deilemera seychellensis*, Hmps. n.

Deilemera seychellensis, Hampson, A. M. N. H. (8) i. (1908) p. 485.

Deilemera leuconœ, Joannis (nec Hopffer), Ann. S. E. France, 1894, p. 430.

Seychelles.—Eight specimens (4 ♂, 4 ♀), all taken in Mahé at Cascade Estate, where it flies by day along the edge of the ancient jungle at about 1000 feet elevation.

Distribution.—Seychelles (Mahé).

49. *Argina astrea*, Drury.

Phalena astrea, Drury, Ill. Exot. Ins. ii. p. 11, t. 6. f. 3.

Euchelia pylotis, Boisd., Faun. Mad. Maur. p. 85.

Deiopia cribraria, Guenée, Maill. Réunion, Lép. p. 24.

Argina cribraria, Saalm., Lep. Madag. p. 160; Hampson, Moths Ind. ii. p. 51, f. 24; Semper, Schmett. Philipp. ii. t. P. ff. 8, 9 (larva, pupa).

Seychelles.—Two specimens of form *pylotis* from Mahé (*de Gaye*).

Distribution.—Réunion; Mauritius; Rodriguez; Madagascar; Seychelles (Mahé, La Digue); throughout India; Burma; Ceylon; Andamans; Nicobars; Christmas I.; Penang; Hongkong; Philippines; New Guinea; New Hebrides; Thursday I.; Queensland.

Family **Sphingidæ.**50. *Herse convolvuli*, Linn.

Sphinx convolvuli, Linn., Syst. Nat. (ed. x) p. 490 (1758); Boisd., Faun. Mad. Maur. p. 77 (1833); Guenée, Maill. Réunion, Lép. p. 22 (1863).

Protoparce convolvuli, Saalm., Lep. Madag. p. 132 (1884); Hampson, Moths Ind. i. p. 103 (fig.); Semper, Schmett. Philipp. ii. t. H. ff. 5-7 (larva, pupa).

Phlegthontius convolvuli, Holland, Proc. U.S. Nat. Mus. 1895, p. 270; Joannis, Ann. S. E. France, 1894, p. 432.

Agrius convolvuli, Tutt, Brit. Lep. iv. p. 330.

Herse convolvuli, Roths. & Jord., Revis. Sphing. p. 11.

Farquhar I.—Larvæ found on "poc-poc," 29 September, 1905, and one moth bred on 19 October.

Distribution.—Europe; throughout Africa; Réunion; Mauritius; Madagascar; Farquhar I.; Seychelles; Aden; throughout S. Asia to Askold I. and Japan; Andamans;

Philippines; Borneo; Celebes; Lombok; Ternate; Java; Sumatra; New Guinea; New Hebrides; New Caledonia; Solomon Is.; Marshall Is.; Fiji; Society Is.; throughout Australia.

51. *Acherontia lachesis*, Fb.

Sphinx lachesis, Fab., Ent. Syst. Suppl. p. 434.

Acherontia morta, Moore, Lep. Ceylon, ii. t. 77. ff. 1, 1 a-c (larva, pupa).

Acherontia lachesis, Roths. & Jord., Revis. Sping. p. 17 (1903).

Chagos.—Two specimens. One found in Ile du Coin (Peros Banhos) on 22 June by Mr. Stanley Gardiner, who also found the larvæ on "Bois malgache." The second example was bred from a larva found at Point Mariaune, Diego Garcia, on 12 July; this pupated on 19 July and emerged on 10 August.

Distribution.—Throughout India and Ceylon; Siam; China; Penang; Singapore; Java; Sumatra; Nias; Borneo; Palawan; Lombok; Timor; Celebes; Ceram.

It is noteworthy that this conspicuous species has not been recorded from the Maldives or the Christmas or Cocos-Keeling Islands.

52. *Acherontia atropos*, Linn.

Sphinx atropos, Linn., Syst. Nat. (ed. x) p. 490.

Brachyglossa atropos, Boisd., Faun. Mad. Maur. p. 77.

Acherontia atropos, Guenée, Maill. Réunion, Léop. p. 23; Saalm., Lep. Madag. p. 129; Joannis, Ann. S. E. France, 1894, p. 432; Hollaud, Proc. U.S. Nat. Mus. 1895, p. 270; Roths. & Jord., Revis. Sping. p. 18.

Seychelles.—Five specimens: two from Mahé (*de Gaye*) without exact data; three bred during November 1905, from pupæ given me by Mr. de Gaye.

I was unable to hear of any superstitions about this moth except the belief that the scales cause disease if introduced into the eye. This idea seems widely spread amongst the Creoles and was probably introduced by the French colonists.

Distribution.—Europe; Asia Minor to N. Persia; throughout Africa; Madeira; Canary Is.; Teneriffe; Azores; St. Helena; Réunion; Mauritius; Rodriguez; Madagascar; Seychelles (Mahé, La Digue); Sokotra.

53. *Cephonodes hylas*, Linn., subsp. *virescens*, Wlgn.

Sphinx hylas, Linn., Mant. Plant. p. 539 (1771).

Potidæa virescens, Wallgn., Kongl. Sv. Vet.-Ak. Handl. (2) v. 4, p. 17 (1865).

Hemoris hylas, Saalm., Lep. Madag. p. 117, t. 3. f. 40 (1884).

Cephonodes hylas, Joannis, Ann. S. E. France, 1894, p. 430; Fawc., T. Z. S. xv. p. 312, t. 48. ff. 13-18 (larva), 19 (pupa).

Cephonodes hylas virescens, Roths. & Jord., Revis. Sping. p. 467.

Coetivy.—Common in September 1905, especially around flowers of "Bois balais" (*Erythroxyton* sp.).

Poivre.—Not very common on 10 October, 1905. Larva found on *Guettarda speciosa*, Linn.

D'Arros.—One young larva on the same tree, 13 October, 1905.

Seychelles.—Three specimens, all from Mahé.

Distribution.—Africa, south of the Sahara; Madagascar; Amirantes (Poivre, D'Arros); Mayotta; Gloriosa; Coetivy; Seychelles.

54. *Cephonodes picus*, Cr.

Sphinx picus, Cramer, Pap. Ex. ii. p. 38, t. 148. f. B.

Macroglossa picus, Kollar in Hügel's Kaschmir, iv. 2, p. 458 (1848).

Cephonodes picus, Roths. & Jord., Revis. Sphing. p. 470, t. 64. f. 16 (1903).

Chagos.—Nine specimens, all from Peros Banhos Atoll. In Ile du Coin, on 25 June, it was noted as common, but very worn; flying high up amongst the coconut-palms, but occasionally settling on a low leaf or descending to feed on the flowers of *Scavola Koenigii* and *Guetlarda speciosa*. Larvæ common on the latter.

These Chagos examples are very large and identical with those from Christmas Island. Specimens in the National Collection from Cocos-Keeling are smaller.

Distribution.—South India; Ceylon; Christmas Island; Cocos-Keeling; Java; Penang; Sumba; and eastwards to the Marshall Islands; New Guinea; Queensland.

This moth possesses a very strong flight and wandering proclivities, often flying miles out to sea. On 18 November, 1905, a number of this species flew on board the ship when we were at least sixty miles distant from the nearest land.

55. *Deilephila nerii*, Linn.

Sphinx nerii, Linn., Syst. Nat. (ed. x.) p. 490.

Deilephila nerii, Boisd., Faun. Mad. Maur. p. 74; Saalm., Lep. Madag. p. 123; Roths. & Jord., Revis. Sphing. p. 507.

Charocampa nerii, Guenée, Maill. Réun., Lép. p. 21.

Daphnis nerii, Hampson, Moths Ind. i. p. 94 (fig.); Joannis, Ann. S. E. France, 1894, p. 432; Tutt, Brit. Lep. iv. p. 249.

Seychelles.—One specimen from Mahé (*de Gaye*).

Distribution.—Europe; Syria; Sierra Leone, southwards to Cape of Good Hope, eastwards to Aden and Abyssinia; Mauritius; Madagascar; Seychelles (Mahé); N.W. India; S. India; Ceylon; Sikhim.

56. *Temnora fumosa*, subsp. *peckoveri*, Butl.

Diodosida peckoveri, Butl., T. Z. S. 1877, p. 637; Saalm., Lep. Madag. p. 121, f. 41 (1884); Joannis, Ann. S. E. France, 1894, p. 432.

Choerocampa peckoveri, Mabille, Ann. S. E. France, 1879, p. 299.

Temnora fumosa ss. *peckoveri*, Roths. & Jord., Revis. Sphing. p. 574, t. 8. f. 5 ♂ (1903).

Seychelles.—Recorded from Mahé by Joannis (*l.c.*). The present collection contains no specimens.

Distribution.—Madagascar; Comoro Is.; Seychelles.

57. *Macroglossum corythus*, Wlk.

Macroglossa corythus, Wlk., Cat. viii. p. 92 (partim).

Macroglossum corythus, Roths. & Jord., Revis. Sphing. p. 659.

Chagos.—Two examples; a male from Ile Anglaise (Salomon) and a female from Salomon Atoll without exact data. The male specimen was bred from a larva found on *Morinda citrifolia* on 31 May; this larva pupated on 18 and emerged 29 June. The moth was also seen in Ile Mapou (Salomon) on 26 May and in Ile du Coin (Peros Banhos) on 25 June.

These examples seem to belong to a rather small local race having the termen of fore wing more rounded than usual.

Distribution.—Japan; China; Formosa; India; Ceylon; Andamans; Perak; Penang; Java; New Guinea; Queensland.

58. *Macroglossum alluaudi*, de Joann.

Macroglossa alluaudi, Joannis, Bull. Soc. Ent. France, 1893, p. 52; Anu. S. E. France, 1894, p. 430, t. 15. f. 1.

Distribution.—Seychelles (Mahé). I have seen no specimens.

59. *Hippotion velox*, Fb.

Sphinx velox, Fab., Ent. Syst. iii. 1, p. 378 (1793).

Sphinx vigil, Guérin in Deless. Voy. Ind. ii. p. 80, t. 25. f. 1 (1843).

Chaerocampa vigil, Moore, Lep. Ceyl. ii. t. 87. ff. 3, 3 a-b (larva and pupa); Hampson, Moths India, i. p. 88.

Hippotion velox, Roths. & Jord., Revis. Sphing. p. 749 (1903).

Chagos.—A single very worn example found at rest under a palm-branch in Ile du Coin (Peros Banhos) on 25 June.

Distribution.—Throughout India; Ceylon; Andamans; Nicobars; Penang; Java; Christmas Island; Lombok; Sumba; Tenimber Is.; Amboina; Buru; German and British New Guinea; d'Entrecasteaux Is.; Louisiade Arch.; Neu Pommern; Queensland; Lifu.

60. *Hippotion celerio*, Linn.

Sphinx celerio, Linn., Syst. Nat. (ed. x.) p. 491 (1758).

Deilephila celerio, Boisd., Faun. Mad. Maur. p. 72 (1833).

Chaerocampa celerio, Guenée, Maill. Réunion, Léop. p. 21 (1863).

Chaerocampa celerio, Saalm., Lep. Madag. p. 123 (1884).

Hippotion celerio, Roths. & Jord., Revis. Sphing. p. 751 (1903).

Coetivy.—One fresh specimen and one very worn example taken on 11 September, 1905.

Distribution.—S. Europe; throughout Africa; S. Thomé; Comoro Is.; Gloriosa; Madagascar; Coetivy; Mauritius; Réunion; Oriental Region eastwards to Solomon Is. and Lifu; Sokotra and Abd-el-Kuri.

61. *Hippotion osiris*, Dalman.

Deilephila osiris, Dalman, Anal. Entom. p. 48 (1823).

Chaerocampa osiris, Saalm., Lep. Madag. p. 122 (1884); Marshall, T. E. S. 1902, p. 397 (larva).

Chaerocampa osyris, Mabille, Ann. S. E. France, 1879, p. 298.

Theretra osiris, Joannis, Ann. S. E. France, 1894, p. 432.

Hippotion osiris, Roths. & Jord., Revis. Sphing. p. 750 (1903).

Seychelles.—Six specimens: five from Mahé, of which four are from Port Victoria (*de Gaye*) and one from Cascade Estate (800 feet), 2 November, 1905; one from Praslin, November 1905.

Distribution.—Spain (*advena*); Sierra Leone; Gold Coast; Nigeria; Uganda; Abyssinia; Nyasaland; Mashonaland; Madagascar; Seychelles (Mahé, Praslin).

62. *Hippotion aurora*, R. & J.

Hippotion aurora, Roths. & Jord., Revis. Sphing. p. 812 (1903).

Coetivy.—One example bred from a larva found on *Guetarda speciosa*. This appears to be a dwarfed and faintly-marked form of *H. aurora*.

Farquhar I.—One example bred from a larva found on "mapou" (*Pisonia Calpidia*).

Eagle I.—Remains of large numbers of empty pupa-cases, apparently belonging to this species, were found under stones.

Distribution.—Madagascar; Gloriosa; Farquhar I.; Coetivy; ? Amirantes (Eagle I.).

The examples from Coetivy and Farquhar Island are both lighter in ground-colour than the typical form and perhaps represent local races.

63. *Hippotion eson*, Cram.

Sphinx eson, Cram., Pap. Exot. iii. p. 57, t. 226. f. C (1779).

Deilephila eson, Boisd., Faun. Mad. Maur. p. 71 (1833).

Chaerocampa eson, Guenée, Maill. Réunion, Léop. p. 21 (1863).

Chaerocampa gracilis, Butl., P. Z. S. 1875, p. 8, t. 2. f. 2.

Chaerocampa eson, Saalm., Lep. Madag. p. 122 (1884); Hampson, Moths Ind. i. p. 85 (1892).

Theretra eson, Joannis, Ann. S. E. France, 1894, p. 432.

Hippotion eson, Roths. & Jord., Revis. Sphing. p. 754 (1903).

Seychelles.—Two specimens: one at light in Port Victoria (Mahé) on 25 October, 1905; the other without exact data, probably from Mahé (*de Gaye*).

Distribution.—Sierra Leone; N. Nigeria; Uganda; S.E. Africa; Réunion; Mauritius; Madagascar; Seychelles (Mahé).

Family Geometridæ.

64. *Petrodava lucicolor*, Butl.

Hyperythra lucicolor, Butl., A. M. N. H. (4) xvi. p. 417 (1875).

Hyperythra miegii, Mabille, Le Naturaliste, 1882, p. 135 (♂); Joannis, Ann. S. E. France, 1894, p. 432, t. 15. f. 4 (♀); Swinhoe, T. E. S. 1904, p. 582.

Tycoonina natalensis, Warren, Nov. Zool. iv. p. 114, ♂ ♀ (1897).

Petrodava olivata, Warren, Nov. Zool. iv. p. 253, ♂.

Petrodava latimarginata, Warren, Nov. Zool. ix. p. 529, ♀ (1902).

? *Petrodava marginata*, Swinhoe, Trans. Ent. Soc. 1904, p. 503.

Seychelles.—Two specimens: one male from St. Anne Island, 26 October, 1905; one female from Mahé without exact data (*de Gaye*).

This moth seems to be extremely variable even as amongst a short series from the same locality, and I am quite unable to perceive any constant difference between any of the above-quoted forms which have been named as distinct, often on the strength of single specimens only.

Distribution.—Abyssinia; Ruwenzori; Upper Congo; Nyasaland; Mashonaland; Beira; Br. E. Africa; Madagascar; Seychelles (Mahé, St. Anne).

65. *Iodis stibolepida*, Butl.

Comibæna stibolepida, Butl., Cist. Ent. ii. p. 394 (1879).

Iodis stibolepida, Swinhoe, Trans. Ent. Soc. 1904, p. 547.

Farquhar I.—A single specimen.

Distribution.—Madagascar; Farquhar I.; Cape Colony.

66. *Gymnoscelis* sp.

Desroches.—One female, taken at west end of island on 15 October, 1905, flying around *Morinda citrifolia*.

This is probably a new species, but I will not describe it as such from a single female specimen not in the best of condition.

67. *Chtoroclystis metallicata*, sp. n. (Plate 17. fig. 2.)

♂. Exp. 11 mm. Palpi dark grey, lighter beneath, depressed, thickly scaled. Antennæ dark fuscous, annulated with lighter between segments. Head, thorax, and abdomen light fuscous, irrorated with darker; abdomen with a pronounced dorsal ridge. Pectus, legs, and venter greyish.

Fore wing light fuscous. Base indistinctly suffused with fuscous; costal margin dark fuscous from base to $\frac{1}{4}$; a conspicuous blackish-fuscous antemedian sinuous striga transversely across wing, commencing on costa as a square spot which is continued from its inner corner as a narrow elbowed bar increasing in breadth to inner margin; this antemedian bar is sharply indicated exteriorly against the paler ground-colour; a narrow sinuous blackish-fuscous striga from costa to dorsum at $\frac{2}{3}$; the area between these two strigæ is occupied by two narrow ill-defined dark-fuscous lines running sinuously across the wing; termen broadly edged with dark fuscous; a dark fuscous dot on dorsum at $\frac{1}{4}$. Cilia fuscous irrorated with darker.

Hind wing light fuscous. A broad antemedian transverse fuscous band, basally indistinct, outwardly sharply defined, not reaching costa; a broad postmedian band of fuscous scales, externally sharply margined with blackish, not reaching costa; termen broadly edged with dark fuscous. Cilia fuscous irrorated with darker.

Both wings are powdered with irregularly scattered scales which reflect a metallic iridescence whose tints vary with the direction of the light-rays.

D'Arros.—One male example (type) captured on 12 October, 1905. This was one of two seen flying around "Bois de feu" (*Morinda citrifolia*).

Desroches.—A single specimen.

Distribution.—Amirantes (D'Arros, Desroches); Mauritius (Curepipe).

68. *Chloroclystis* sp.

Seychelles.—One worn and broken specimen from Praslin, November 1905. It may possibly be *Chl. metallicata*, but is in too bad a state for accurate comparison.

No Eupitheciid has previously been recorded from the Seychelles.

69. *Craspedia minorata*, Bdv.

Geometra minorata, Boisd., Faun. Mad. Maur. p. 115 (1833).

Acidalia mauritiata, Guenée, Spéc. Gén. i. pp. 476, 809; Guenée, Maill. Réun., Lép. p. 33 (1863).

Acidalia consentanea, Walk., Cat. xxii. p. 745.

Emmiltis consentanea, Swinhoe, Trans. Ent. Soc. 1904, p. 555.

Acidalia actuarial, Walk., Cat. xxii. p. 752.

Craspedia actuarial, Moore, Lep. Ceylon, iii. t. 200. f. 8; Hampson, Moths Ind. iii. p. 432.

Acidalia minorata, Joannis, Ann. S. E. France, 1894, p. 435.

? *Emmiltis minorata*, Swinhoe, Trans. Ent. Soc. 1904, p. 558*.

D'Arros.—Two specimens.

Coetivy.—Six specimens of grey type.

Farquhar I.—One worn specimen only.

Seychelles.—Eleven examples, from Mahé, Praslin, and Frigate Island. Some specimens are suffused with orange-yellowish.

Distribution.—Throughout W. and S. Africa; Massowah; Mauritius; Farquhar I.; Coetivy; Seychelles; Sokotra; Aden; throughout India; Burma; Ceylon; Andamans; Nicobars; Singapore; Pulo Laut; Philippines.

Family **Nymphalidæ**.

70. *Danais chrysippus*, Linn.

Papilio chrysippus, Linn., Syst. Nat. (ed. x.) p. 471.

Danais chrysippus, Boisd., Faun. Mad. Maur. p. 35; Guenée, Maill. Réun., Lép. p. 9; Distant, Rhop. Malay. p. 20, t. 1. f. 10; Saalm., Lep. Madag. p. 73; Joannis, Ann. S. E. France, 1894, p. 427; Holland, Proc. U.S. Nat. Mus. 1895, p. 265; Bingham, Butt. Ind. i. p. 11, t. 1. f. 2; Kershaw, Butt. Hongkong, p. 10, t. 1. f. 6, t. 1 a. ff. 5, 6 (larva, pupa).

Seychelles.—Thirty specimens from Mahé and Praslin. They are quite typical and are quite similar to examples from Madagascar, Mauritius, Rodriguez, and Ceylon. A single male (from Mahé, Cascade Estate, 200 feet, 3 November, 1905), however, shows a slight

* The name *minorata*, Boisd., in this reference appears to have been misapplied to a quite distinct species.

approach to var. *alcippoides*, Moore, the posterior veins of the hind wing being distinctly outlined with white scales.

It is noticeable that no examples of the form *dorippus* have been recorded from these outlying islands.

Distribution.—S.E. Europe; throughout Africa; Canary Is.; Réunion; Mauritius; Rodriguez; Madagascar; Aldabra; Comoro Is.; Seychelles (Mahé, Praslin, La Digue); Sokotra; Aden to Syria and India; throughout India; Burma; Ceylon; Malay Peninsula; Java; Lombok; Siam; S. China.

71. *Euplœa mitra*, Moore.

Euplœa mitra, Moore, Cat. Lep. Mus. E. I. Co. i. p. 127 (1857); Joannis, Ann. S. E. France, 1894, p. 427; Holland, Proc. U.S. Nat. Mus. 1895, p. 266, t. 8. f. 6.

Pramasa mitra, Moore, P. Z. S. 1883, p. 281, t. 31. f. 8 (♂).

Seychelles.—Thirty-six specimens, all from Mahé and nearly all from Cascade Estate (about 800 feet). The female seems much scarcer than the male and only forms about 20 per cent. of captures.

Distribution.—Seychelles; Aldabra.

It is noteworthy that this species does not appear to occur outside of Mahé within the Seychelles group—at least, all these specimens are from Mahé and those recorded by Joannis and Holland also had the same origin.

72. *Melanitis leda*, Drury.

Papilio leda, Drury (nec Linn.), Exot. Ins. i. t. 15. ff. 5, 6 (1773).

Papilio ismene, Cramer, Pap. Exot. i. t. 26. ff. A, B (1775).

Cylo leda, Boisd., Faun. Mad. Maur. p. 58.

Melanitis leda var. *fulvescens*, Guenée, Maill. Réunion, Lép. p. 15 (1863); Saalm., Lep. Madag. p. 90; Mabille in Grandid. Madag. p. 12, t. 2. ff. 5-7; Joannis, Ann. S. E. France, 1894, p. 427; Holland, Proc. U.S. Nat. Mus. 1895, p. 266.

Melanitis leda, Dist., Rhop. Malay. pp. 41, 42, 411, t. 4. ff. 9-12; Kershaw, Butt. Hongkong, p. 24, t. 3. ff. 2, 3, and t. 1 a. ff. 9, 10 (larva, pupa); Mathew, Trans. Ent. Soc. 1888, p. 137 (early stages).

Melanitis ismene, Forsayeth, Trans. Ent. Soc. 1881, p. 382, t. 14. ff. 2-2 b (larva, pupa); Green, Spol. Zeylan. ii. p. 75 (tab.); Bingham, Butt. Ind. i. p. 158 (fig.).

Seychelles.—Twelve specimens, November 1905, all from Mahé at an elevation of about 1000 feet on edge of endemic jungle. All these specimens belong to the ocellate (wet-season) form.

Distribution.—Throughout Africa south of a line from Ashanti to Abyssinia; Réunion; Mauritius; Rodriguez; Madagascar; Seychelles (Mahé, Platte); throughout Indo-Malayan Region to Australia.

73. *Junonia vellida*, Fb.

Papilio vellida, Fab., Mant. Ins. ii. p. 35 (1787); Donovan, Ins. New Holl. t. 25. f. 3 (1805).

Junonia vellida, Mathew, Trans. Ent. Soc. 1888, t. 6. f. 11 (larva).

Chagos.—Common throughout the whole Chagos group and generally noted as

abundant. There are no specimens from Egmont Atoll, but it is reported to occur there, although not commonly. It was noted as particularly abundant on 27 May and 22 June in Ile de la Passe (Salomon) around the bushes of *Scævola Kœnigii*, on which the larvæ were found in all stages from newly-hatched to full-fed. The larvæ feed on the underside of the leaves, eating away the green cuticle in irregular patches, generally midway between the edge and mid-rib of the leaf. The greenish-grey pupæ were found attached to the underside of the mid-rib of a *Scævola* leaf.

The forty specimens collected seem to belong to the wet intermediate phase and vary considerably *inter se*, there being a marked tendency to duplication of the blue ocelli.

Distribution.—Tasmania to Queensland; New Hebrides; Ellice Islands; Java; Cocos-Keeling; and Christmas Island.

Chagos specimens are quite similar to those from Christmas Island and Cocos-Keeling.

74. *Pyrameis cardui*, Linn.

Papilio cardui, Linn., Syst. Nat. (ed. x.) p. 475.

Vanessa cardui, Boisd., Faun. Mad. Maur. p. 43; Guenée, Maill. Réunion, Léop. p. 10; Bingham, Butt. Ind. i. p. 365 (fig.); Kershaw, Butt. Hongkong, p. 42, t. 5. f. 3.

Pyrameis cardui, Saalm., Lep. Madag. p. 77.

Seychelles.—The present collection contains no specimens, but Mr. H. P. Thomasset informed me that he had seen this species on several occasions at Cascade Estate (Mahé), and Mr. J. A. de Gaye reports having taken thirteen specimens in one day in St. Anne Island (*in litt.*, 3 May, 1906).

Distribution.—World-wide except in arctic and subarctic regions and in New Zealand. In the East African Islands it is recorded from Réunion, Mauritius, and Madagascar. It is also found throughout India and Ceylon to the Maldives and in Sokotra.

75. *Hypolimnias bolina*, Linn.

Papilio bolina, Linn., Syst. Nat. (ed. x.) p. 479 (1758).

Apatura bolina, Moore, Lep. Ind. iv. p. 137, t. 329 figs. 1-1*f* (larva and pupa, ♂ ♀), and t. 330. figs. 1-1*f*, ♂ ♀.

Hypolimnias bolina, Bingham, Butt. India, i. p. 386; Kershaw, Butt. Hongkong, p. 45, t. 5. ff. 6-11, t. 6*a*. figs. 3, 4 (larva, pupa).

Chagos.—The collection contains 14 males and 5 females, all from Salomon and Peros Banhos Atolls. It occurs, however, throughout the Chagos Group, actual localities and dates being:—

Salomon Atoll.—Ile du Sel, 24 May, one, flying high—Takamaka, 25 May, two males—Ile de la Passe, 27 May, one seen flying high over the trees; 22 June, common—Ile Anglaise, 31 May, 5 males, 1 female, all rather worn, flying on edge of cocos on seaward side of the islet—Ile Boddam, 3 June, 1 male, 1 female seen.

Peros Banhos.—Ile Diamant, 19 May, 1 male flying around tops of cocos—Ile du Coin, 6 June; abundant.

Diego Garcia.—One male seen on Middle Islet, June 12.

Egmont Atoll.—Reported to occur, but not common.

Female specimens of this butterfly from the Chagos Islands are characterized by the great extension of the white markings of the hind wings, in which respect they exactly resemble specimens of *H. bolina* from Palawan as represented in the National Collection. I can discern no difference whatever, yet it appears very remarkable that such a striking form of parallel variation should have arisen in two localities so widely separated. This form of the female is shown on Plate 17. fig. 3.

The early stages of this butterfly were not met with.

Distribution.—Throughout Ceylon; India; Burma; Andamans; Nicobars; the Malay Peninsula; Siam; China; Sumatra; and Java.

76. *Hypolimnas misippus*, Linn.

Papilio misippus, Linn., Mus. Ulr. p. 264 (1764).

Diadema bolina (♂) *misippus* (♀), Boisd., Faun. Mad. Maur. p. 39.

Hypolimnas misippus, Saalm., Lep. Madag. p. 82; Bingham, Butt. Ind. i. p. 388; Kershaw, Butt. Hongkong, p. 47, t. 7. f. 13, t. 8. f. 1; Joannis, Ann. S. E. France, 1894, p. 428.

Seychelles.—The present collection contains only a single male taken in Mahé by Mr. J. A. de Gaye, who reports that this butterfly was common in March and April, 1906, in St. Anne Island.

Distribution.—S. America; throughout Africa; Réunion; Mauritius; Rodriguez; Madagascar; Gloriosa; Aldabra; Sokotra; throughout India and Ceylon to Malayau Subregion and China; Christmas Island; Nicobars; Sumatra; Java.

[77. *Atella phalantha*, Drury.

Papilio phalantha, Dru., Ins. i. t. 21. ff. 1, 2.

Argynnys phalanta, Boisd. Faun. Mad. Maur. p. 41.

Atella phalanta, Guenée, Maill. Réunion, Léop. p. 10; Saalm., Lep. Madag. p. 77; Holland, Proc. U.S. Nat. Mus. 1895, p. 266.

Atella phalantha, Bingham, Butt. Ind. i. p. 412 (fig.); Kershaw, Butt. Hongkong, p. 31, t. 4. f. 8, and t. 3 a. ff. 1, 2 (larva, pupa).

Recorded from Mahé by Dr. Holland, but as Dr. Abbott's collection also contained examples of this species from Aldabra and Gloriosa I have little doubt but that the specimen in question had been mis-labelled and originally came from one of these other two localities.]

Distribution.—Tropical and S. Africa; Réunion; Mauritius; Madagascar; Comoro Is.; Gloriosa; Aldabra; Sokotra; throughout India; Ceylon; Burma; Siam; China; Japan; Malayan Subregion; Java; Sumatra.

78. *Atella philiberti*, Joann.

Atella philiberti, de Joannis, Bull. S. E. France, 1893, p. 51; Joannis, Ann. S. E. France, 1894, p. 427, t. 15. f. 7.

Atella seychellarum, Holland, Proc. U.S. Nat. Mus. 1895, p. 266, t. 8. f. 11.

Seychelles.—Thirty-three examples, of which four are from Praslin, the others from

Mahé. It is found at a height of about 800–1000 feet and over, but is not seen lower down. It is fond of beds of streams, where it flies over the trees in company with *Euplœa mitra*, having an elegant sailing flight.

In the Praslin examples, as Joannis has remarked, the metallic patch of the underside is usually more yellowish rather than green, but this is paralleled in many of the Mahé specimens and so cannot be taken as a distinctive race-character.

Distribution.—Gloriosa; Aldabra; Seychelles (Praslin, Mahé).

Family Papilionidæ.

79. *Papilio disparilis*, Bdv., var. *nana*, Obth.

Papilio disparilis v. *nana*, Oberthur, Études d'Entomologie, iv. p. 54; Saalm., Lep. Madag. pp. 35, 56; Joannis, Ann. S. E. France, 1894, p. 426.

This butterfly, if it really occurs in the Seychelles, must be very rare, as it has remained quite unknown to all the entomologists who have collected in the group during the last thirty years. I doubt the accuracy of the locality.

This variety, which is only half the size of the type-form *disparilis* (from Réunion), appears peculiar to the Seychelles.

Family Pieridæ.

80. *Catopsilia florella*, Fb.

Papilio florella, Fab., Syst. Ent. p. 479.

Callidryas florella, Guenée, Maill. Réunion., Lép. p. 5, t. 22. ff. 1, 2; Trimen, Trans. Ent. Soc. 1866, p. 330; Saalm., Lep. Madag. p. 66.

Catopsilia florella, Joannis, Ann. S. E. France, 1894, p. 429; Bingham, Butt. India, ii. p. 223 (fig.).

Seychelles.—Recorded by Joannis as collected in Mahé by Philibert, but I much doubt the accuracy of this locality. If it occurs in the Seychelles it must be very scarce. Certainly we never saw it, and it was also quite unknown to the local collectors.

Distribution.—Africa from C. de Verde Is. to Zanzibar; Réunion; Mauritius; Madagascar; Mayotta; Sokotra; Abd-el-Kuri; throughout India; Assam; Burma; Siam; China; Ceylon.

[81. *Teracolus aldabrensis*, Holland.

Teracolus aldabrensis, Holland, Proc. U.S. Nat. Mus. 1895, p. 269, t. 8. ff. 7, 8; Joannis, Bull. S. E. France, 1899, p. 199.

This species is recorded from Mahé (Seychelles) by Martin Linell (Proc. U.S. Nat. Mus. xix. p. 695), but there is evidently some error of locality, as otherwise this butterfly is quite unknown from the Seychelles, and such a conspicuous species is hardly likely to have escaped notice if it really occurs there.]

Family **Lycænidaë.**82. *Zizera maha*, Koll.

Lycæna maha, Kollar in Hügel's Kaschmir, iv. p. 422.

Zizera maha, Bingham, Butt. Ind. ii. p. 355, t. 19. ff. 136, 137.

Seychelles.—I have seen no specimens of this species from the Seychelles, but Mr. J. A. de Gaye reports (*in litt.*, 13 March, 1906) that one specimen caught in Mahé by Mr. Thomasset was identified as *Z. maha* by Col. Manders. This must be a rarity in the Seychelles, as I find no examples in a series of nearly sixty *Zizera* in the present collection.

Distribution.—India from Himalayas to Travancore; Upper and Lower Burma; Seychelles (Mahé).

83. *Zizera lysimon*, Hb.

Papilio lysimon, Hübn., Samm. Eur. Schm. ff. 534, 535 (1798?).

Lycæna lysimon, Herr.-Schff., Schmett. Eur. i. p. 118, t. 5. ff. 28, 29 (1843).

Lycæna knysna, Trimen, Trans. Ent. Soc. 1862, p. 282.

Lycæna lysimon, Saalm., Lep. Madag. p. 98 (1884); Trimen, S. Afr. Butt. ii. p. 45 (1887);

Joannis, Ann. S. E. France, 1894, p. 428.

Farquhar I.—Five male examples in one place only, apparently a small garden, in the village in North Island. (? Introduced.)

Desroches.—One worn female, 15 October, 1905, in cultivated ground near the settlement.

Eagle I.—Four specimens (3 ♂, 1 ♀), 17 October. Common, but all are worn.

Seychelles.—Fifty-seven specimens from Mahé, St. Anne, and Praslin.

Seychelles specimens seem to be constant in having an additional spot (sometimes reduced to a mere shade, but usually well-defined and distinct) below the ocellus of the cell, this latter ocellus itself being frequently duplicate.

Distribution.—S. Europe; throughout Africa; Teneriffe; Mauritius; Réunion; Madagascar; Comoro Is.; Farquhar I.; Amirantes; Seychelles; Sokotra; Bengal; Ceylon; Java.

[84. *Zizera gaika*, Trim.

Lycæna gaika, Trimen, Trans. Ent. Soc. 1862, p. 403.

Zizera gaika, Holland, Proc. U.S. Nat. Mus. 1895, p. 268; Bingham, Butt. Ind. ii. p. 359.

Recorded by Dr. Holland as from Providence I., Alphonse I. (Amirantes), and from Mahé (Seychelles), probably in error for *Z. lysimon*. I have seen no *Z. gaika* from this region, nor has it been recorded from Madagascar.]

Distribution.—S. Africa; Mauritius; Aden; throughout India; Ceylon; Assam; Burma; Tenasserim; Andamans; Sumatra; Java.

85. *Polyommatus bæticus*, Linn.

Papilio bæticus, Linn., Syst. Nat. (ed. xii.) p. 789.

Lycæna bæticus, Boisd., Faun. Mad. Maur. p. 23; Guenée, Maill. Réunion, Léop. p. 18; Saalm., Lep. Madag. p. 100; Joannis, Ann. S. E. France, 1894, p. 428.

Polyommatus bæticus, Bingham, Butt. Ind. ii. p. 432; Kershaw, Butt. Hongkong, p. 75. t. 9. ff. 2, 10.

Seychelles.—Nineteen specimens, all from Mahé and mostly from sea-level or the lower slopes of the hills.

Distribution.—S. Europe; throughout Africa and Arabia; Madeira; Teneriffe; St. Helena; Réunion; Mauritius; Madagascar; throughout India; Ceylon; Andamans and Nicobars; Assam to Malay Peninsula; Sumatra; Java; China; throughout Malayan Subregion; Australia; Hawaiian Is.

86. *Syntarucus telicanus*, Lang.

Papilio telicanus, Lang, Verz. sein. Schmett. ii. p. 47 (1789); Hübn., Eur. Schmett. i. ff. 371, 372, 553, 554 (1798-1803).

Lycæna telicanus, Boisd., Faun. Mad. Maur. p. 24; Guenée, Maill. Réunion, Léop. p. 18; Saalm., Lep. Madag. p. 100; Holland, Proc. U.S. Nat. Mus. 1895, p. 268; Joannis, Ann. S. E. France, 1894, p. 428.

Eagle I.—Three male specimens, 17 October, 1905.

Seychelles.—Twenty specimens, from Mahé, St. Anne, and Praslin. These do not seem to differ in any constant respect from examples from the Mediterranean region.

Distribution.—S. Europe; W. Asia; throughout Africa; Réunion; Mauritius; Rodriguez; Madagascar; Aldabra; Amirantes (Alphonse, Eagle I.); Seychelles.

Family **Hesperiidæ**.87. *Eagris sabadius*, Gray.

Thymeles sabadius, Gray in Griffith's 'Animal Kingdom,' vol. xv. Insecta, pt. ii. p. 594, t. 99. f. 2 (1832); Boisd., Faun. Mad. Maur. p. 63, t. 9. f. 2 (1833).

Hesperia andracne, Boisd., Faun. Mad. Maur. p. 67 (1833) (♀).

Antigonus andrachne, Saalm., Lep. Madag. p. 112, f. 14 (1884).

Eagris sabadius, Guenée, Maill. Réunion, Léop. p. 19 (1863); Joannis, Ann. S. E. France, 1894, p. 429; Holland, P. Z. S. 1896, p. 17.

Nisoniades sabadius, Trimen, Trans. Ent. Soc. 1866, p. 339.

Seychelles.—Twenty-one specimens, all from Mahé. This species generally occurs on the edge of the jungle at about 800 feet and over. It has a peculiar habit of settling on the under surface of leaves with its wings outspread.

E. plicata, Butl., from East Africa seems hardly distinguishable from this species.

Distribution.—Réunion; Mauritius; Madagascar; Seychelles (Mahé).

88. *Parnara borbonica*, Bdv.

Hesperia borbonica, Boisd., Faun. Mad. Maur. p. 65, t. 9. ff. 5, 6 (1833); Chenu, Encycl. d'Hist. Nat. f. 385 (1852); Guenée, Maill. Réunion, Lépid. p. 20, t. 22. ff. 3, 4 (larva, pupa) (1863); Saalm., Lep. Madag. p. 108 (1884).

Pamphila borbonica, Trimen, Trans. Ent. Soc. 1866, p. 338; Mabille in Grandid. Madag. Lep. i. p. 360, t. 55. ff. 6, 6 a (1887); Joannis, Ann. S. E. France, 1894, p. 429.

Parnara borbonica, Holland, P. Z. S. 1896, p. 62.

Seychelles.—Thirty specimens, of which one is from Praslin (November 1905) and the rest from Mahé.

Distribution.—S. Africa; Réunion; Mauritius; Rodriguez; Madagascar; Seychelles (Mahé, Praslin).

89. *Parnara morella*, de Joannis.

Pamphila morella, Joannis, Bull. S. E. France, 1893, p. 52; Joannis, Ann. S. E. France, 1894, p. 429, t. 15. f. 6.

? *Gegenes poutieri*, Holland (nec Boisd.), Proc. U.S. Nat. Mus. 1895, p. 270.

Seychelles.—Six specimens, all taken by myself in Mahé (Cascade Estate, 800 feet) on 2 November, 1905. The collection also contains one specimen, received from Mr. J. A. de Gaye without exact data, which is doubtfully referable to this species.

Distribution.—Peculiar to the Seychelles group and as yet only found in Mahé.

90. *Parnara gemella*, Mab.

Pamphila gemella, Mabille, Bull. S. E. Belg. 1884, p. 187; Mabille in Grandid. Madag. Lep. i. p. 359, t. 55. ff. 7, 7 a (1887); Joannis, Ann. S. E. France, 1894, p. 429.

Hesperia ellipsis, Saalm., Lep. Madag. p. 109 (1884).

Gegenes gemella, Holland, Proc. U.S. Nat. Mus. 1895, p. 270.

Parnara gemella, Holland, P. Z. S. 1896, p. 62.

Seychelles.—Forty-two specimens, of which three are from Praslin and the other thirty-nine from Mahé (mostly from Cascade Estate on 2 November, 1905, when male and female were taken *in cop.*).

Distribution.—Madagascar; Amirantes (Alphonse I.); Seychelles (Mahé, Praslin, Platte).

91. *Parnara poutieri*, Bdv.

Hesperia poutieri, Boisd., Faun. Mad. Maur. p. 65 (1833).

Pamphila poutieri, Mabille in Grandid. Madag. Lep. i. p. 363, t. 55. ff. 8, 8 a, 9, 9 a.

Parnara poutieri, Holland, P. Z. S. 1896, p. 63.

? Seychelles.—In his list of Dr. Abbott's collection, Dr. Holland describes * "one most wretched specimen, from Mahé," under the name of *Gegenes poutieri*. It seems probable that the specimen is referable to *P. morella*, a species which Dr. Holland appears to have overlooked, as he omits it from his paper on African Hesperidæ (quoted above) written at about the same time.

Distribution.—Madagascar.

* Proc. U.S. Nat. Mus. 1895, p. 270.

92. *Parnara marchalii*, Bdv.

Hesperia marchalii, Boisd., Faun. Mad. Maur. p. 66 (1833); Trimen, Trans. Ent. Soc. 1866, p. 339; Saalm., Lep. Madag. p. 107 (1884).

Seychelles.—A single unlabelled worn specimen, from the collection of Mr. J. A. de Gaye, is supposed to have come from Silhouette. As, however, Mr. de Gaye's collection contained numerous examples of Lepidoptera collected by him in Mauritius, I am inclined to question the true origin of this particular specimen, and this species must be queried as a Seychelles butterfly pending further evidence.

Distribution.—Mauritius; ? Seychelles.

93. *Rhopalocampta arbogastes*, Gn.

Thymele arbogastes, Guenée, Maill. Réun., Léop. p. 19 (1863).

Hesperia florestan, Boisd. (nec Cram.), Faun. Mad. Maur. p. 61 (1833).

Ismene margarita, Butl., Cist. Ent. ii. p. 389 (1879).

Ismene arbogastes, Saalm., Lep. Madag. p. 114 (1884); Mabilie in Grandid. Madag. i. p. 323, t. 51. ff. 5, 5 a; Joannis, Ann. S. E. France, 1894, p. 429.

Rhopalocampta arbogastes, Holland, P. Z. S. 1896, p. 99.

Seychelles.—A single specimen from Mahé (Cascade Estate, 800 feet, 2 November, 1905).

Distribution.—Madagascar; Seychelles; Réunion.

The form *floristan* is found in Mauritius and Rodrigues.

Family **Pyralidæ**.94. *Corcyra cephalonica*, Stt.

Corcyra cephalonica, Stainton, Ent. Mo. Mag. ii. p. 172; Leech, Pyral. t. 13. f. 5; South, Entom. 1890, p. 336, t. 4. f. 3; Rag., Mon. ii. t. 45. f. 24.

Coetivy.—Common in rice-stores, September 1905. Doubtless imported by man.

Distribution.—W. Indies; S. Europe; C. and S. Africa; Ceylon; Christmas I.; Kei Is.

95. *Culladia admigratella*, Wlk.

Arazes admigratella, Walk., Cat. xxvii. p. 192.

Culladia admigratella, Hampson, Moths Ind. iv. p. 11, f. 10; Hampson, A. M. N. H. (8) i. (1908) p. 486.

Chagos.—One very worn specimen taken in Diego Garcia on 12 June, flying in the sunshine around flowers of "Bois balais" (*Erythroxylon* sp.).

Seychelles.—Two examples, St. Anne Island, 26 October. The 'Valhalla' collection also contained an example from Praslin.

Distribution.—Sierra Leone; Old Calabar; Nyasaland; Mauritius; Seychelles; Sokotra; throughout India; Burma; Ceylon; Chagos; Pulo Laut; Philippines; Sumatra.

96. *Crambus seychellellus*, sp. n. (Plate 17. fig. 4.)

♂. Exp. 23 mm. Labial palpi porrect, more than twice length of head, clothed with long hair; greyish-fuscous. Maxillary palpi triangularly scaled with long hair; greyish-fuscous. Frons rounded. Vertex with collar-like tuft of scales above and between eyes. Antennæ reddish-brown, with greyish appressed serrations. Head, thorax, and abdomen pale glistening greyish-yellow, thorax with admixture of fuscous scales especially on prothorax and tegulæ. Abdomen with pale yellowish anal tuft. Legs pale yellow-grey irrorated with fuscous; outer tibial spurs half length of inner.

Fore wing with costa slightly arched, apex subrectangular, tornus well marked, termen very slightly undulate; pale greyish; costal third thickly irrorated with pale reddish-fuscous scarcely evident towards apex; dorsal third also irrorated with pale reddish-fuscous scales, which are notably collected to form ill-defined inwardly-oblique short transverse strigæ commencing on dorsum at about $\frac{2}{5}$ and $\frac{1}{2}$ of wing-length; a sub-terminal pale reddish-fuscous transverse striga, indistinct towards costa but well marked on dorsal half; termen indicated in fuscous and with a few fuscous scales on terminations of nervures: cilia whitish, pale fuscous towards base.

Hind wing pale glistening greyish-fuscous, with long scale-pencils along base of median and submedian nervures; cilia whitish, darker along base.

Seychelles.—Five specimens, taken at light in Port Victoria, Mahé, 25 October, 1905, when the species was noted as "abundant."

97. *Cirrhochrista perbrunnealis*, sp. n. (Plate 17. fig. 5.)

♂. Exp. 25 mm. Labial palpi down-curved, about twice length of head, thickly covered with long reddish-fuscous hair, third joint not visible. Maxillary palpi long; apex triangularly scaled; red-brown. Frons oblique. Antennæ ciliated (1). Head, thorax, and abdomen fuscous (very mouldy). Pectus and legs shining whitish. Hind wing with hair-pencil.

Fore wing white, thickly irrorated with reddish-brown except in three subcostal patches, the first rounded and subbasal, the second subtriangular and situated between $\frac{1}{4}$ and $\frac{1}{2}$ of wing-length, the third subquadrate at about $\frac{2}{3}$; these patches are outlined by darker red-brown scales and are very prominent; there are also two small paler specks, each rendered conspicuous by an outline of darker red-brown scales, the first subdorsal at $\frac{1}{2}$, the second subtornal; cilia yellowish on termen, red-brown on dorsum.

Hind wing white; a narrow ill-defined red-brown transverse striga at $\frac{2}{3}$, expanding between veins 4 and 2 into a triangular patch reaching termen; some ill-defined yellowish markings along termen on terminations of nervures; cilia pale yellowish, whitish apically.

Seychelles.—A single specimen taken by Mr. J. A. de Gaye in St. Anne Island in December, 1906. It has been mouldy and is now in bad state.

M. de Joannis records (Bull. Soc. Ent. France, 1899, p. 199) a *Cirrhochrista* as received from Mahé, but does not describe his specimen at all; it is probably the same species.

Distribution.—Seychelles (St. Anne, ? Mahé).

98. *Ephestia cautella*, Wlk.

Pempelia cautella, Walk., Cat. xxvii. p. 73.

Ephestia cautella, Hampson, Moths Ind. iv. p. 66, f. 44; Joannis, Ann. S. E. France, 1894, p. 437.

Seychelles.—Recorded from the Seychelles by M. de Joannis. Not found in the present collection. This species, however, is of cosmopolitan distribution, being a common food-pest carried everywhere by shipping, so that its presence in the Seychelles is only to be expected.

Distribution.—Central and South Europe; throughout Africa; Seychelles; W. and S. Asia; Ceylon; Sumbawa; Australia; America.

99. *Heterographis insularella*, Rag.

Heterographis insularella, Ragonot, Bull. S. E. France, 1893, p. 295; Joannis, Ann. S. E. France, 1894, p. 437, t. 15. f. 2.

Seychelles.—Received from Mahé by M. de Joannis. I have seen no specimens.

Distribution.—Seychelles (Mahé).

100. *Phycita* sp.

Seychelles.—A single specimen from Mr. J. A. de Gaye's collection; it is without exact data, but was doubtless taken in Mahé.

This is almost certainly a new species peculiar to the Seychelles, but as the only specimen available is a single female, I think it advisable to defer any attempt at nomenclature or description. In general pattern and coloration this specimen comes very close to some dull-coloured forms of *Pempelia subornatella*, Dup.

Distribution.—Seychelles (Mahé).

101. *Etiella zinckenella*, Tr.

Pempelia zinckenella, Treit., Schmett. Eur. ix. i. p. 201.

Rhamphodes herabellla, Guenée, Maill. Réunion, Lép. p. 72.

Etiella madagascariensis, Saalm., Lep. Madag. p. 509.

Etiella zinckenella, Hampson, Moths India, iv. p. 108; Pag., Lep.-Het. Madag. p. 129.

Seychelles.—Five specimens, all from Mahé. On 31 October, 1905, I found it fairly common amongst long grass, &c. on the hill-side just above the Botanical Gardens in Port Victoria.

Distribution.—S. Europe to Cyprus; W. Indies; Colorado to Chile; W., S., and E. Africa; Sokotra; Réunion; Madagascar; Mayotta; Seychelles (Mahé); throughout India; Ceylon; Assam to Korea and Japan and to N. S. Wales.

102. *Endotricha chagosalis*, sp. n. (Plate 17. fig. 6.)

♂. Exp. 10 mm. Labial palpi upturned, reaching vertex, thickly scaled, pale fuscous; terminal joint shorter than second, fuscous. Maxillary palpi long, reaching well above vertex, up-curved, with long scales on inner side towards apex. Antennæ

ciliated, basal joint dilated (terminal portion broken). Head, thorax, and abdomen fuscous, intermixed with white scales. Legs pale grey; spurs on posterior tibia rather short, subequal.

Fore wing with base of costa strongly arched. Whitish-grey; basal third of costa broadly dark fuscous, the dorsal area of wing also suffused with dark fuscous towards base; a prominent dark fuscous discocellular spot; terminal fifth of wing suffused with fuscous, the inner and terminal margins of this suffusion indicated in darker fuscous. Cilia greyish-fuscous with a dark fuscous basal line; paler around tornus.

Hind wing dark fuscous, with a broad whitish-grey postmedial fascia and an ill-defined greyish subterminal fascia.

Chagos.—A single specimen from Ile de la Passe (Salomon), 22 June, 1905. This was the only one seen here, but I have a note that I saw an example of this species at Minni-minni (Diego Garcia) on 23 July, 1905.

103. *Endotricha mesenterialis*, Wlk.

Doththa mesenterialis, Walk., Cat. xvii. p. 285.

Endotricha mesenterialis, Moore, Lep. Ceylon, iii. t. 178. f. 8; Hampson, Moths Ind. iv. p. 133, f. 75.

Chagos.—A single female specimen from Takamaka Isd., Salomon.

Distribution.—Throughout India; Burma; E. Pegu; W. China; Formosa; Sarawak; Java; Nicobars; Ceylon; Maldives.

104. *Endotricha* sp. n.

Poivre.—A single male example, taken on 10 October, 1905, without an abdomen and in very worn state.

Seychelles.—Two specimens collected by Mr. J. A. de Gaye; they are without data, but are doubtless from Mahé.

These specimens come very close to *E. mesenterialis*, Wlk., the basal joint of the male antenna bearing the curious recurved spine characteristic of that section of the genus (see 'Moths India,' iv. p. 133, f. 75, and T. E. S. 1896, p. 483).

The species appears to differ from *mesenterialis* in the very distinct broad creamy yellow fascia across both wings and in the different coloration of the cilia, and is almost certainly new, but in the absence of further material in better condition I will not venture to describe or name it.

I assume that the Seychelles *Endotricha* recorded by M. l'Abbé de Joannis is this same species and not the true *E. mesenterialis*, Wlk. (see Ann. Soc. Ent. France, 1894, p. 435, and Bull. S. E. Fr. 1899, p. 199).

105. *Endotricha vinolentalis*, Rag.

Endotricha vinolentalis, Ragonot, Ann. S. E. France, 1890, p. 525; Hampson, Trans. Ent. Soc. 1896, p. 485; Hampson, A. M. N. H. (8) i. (1908) p. 477.

Seychelles.—Three specimens: one taken in St. Anne Island on 26 October, 1905;

two received from Mr. J. A. de Gaye and labelled "Cascade Forest, March, ♂ ♀ *in coitu*."

The male does not exhibit the tooth on the basal joint of the antenna characteristic of the *mesenterialis* section of the genus.

Distribution.—W. Africa; Mayotta; Seychelles (Mahé, St. Anne). Doubtless this species is more widely distributed, but has been overlooked.

106. *Pyralis manihotalis*, Gn.

Pyralis manihotalis, Guenée, Delt. et Pyral. p. 121; Hampson, Moths Ind. iv. p. 151, f. 87.

Pyralis gerontesalis, Moore, Lep. Ceylon, iii. t. 178. f. 6.

Seychelles.—Two specimens, both found in my cabin on board H.M.S. 'Sealark' whilst lying in the harbour of Port Victoria, Mahé, 24 October and 3 November, 1905. These may have flown off from the shore or may have been bred in the ship; but it will readily be seen how easily a species of this sort is distributed by shipping.

Distribution.—S. America; W. and S. Africa; Seychelles; India; Ceylon; Nicobars; Cocos-Keeling Is.; Java; Singapore; W. China; New Guinea; Formosa; Queensland; N. S. Wales; Sandwich Is.

107. *Pyralis farinalis*, Linn.

Phalæna farinalis, Linn., Syst. Nat. (ed. x.) p. 226.

Pyralis farinalis, Stdgr., Cat. Lep. Pal. (ed. iii.) ii. p. 45; Hampson, A. M. N. H. (8) i. (1908) p. 486.

Seychelles.—Not found in the present collection, but previously recorded as obtained from Praslin ('Valhalla' cruise, *l. c.*). Though not so stated, these specimens may have been obtained on board the ship. In any case, if it now occurs in the Seychelles, this species has doubtless been introduced by man.

Distribution.—Europe; N. and C. Asia; Japan; N. America; N. Africa; Australia; New Zealand; Seychelles (Praslin).

108. *Bradina aureolalis*, de Joann.

Bradina aureolalis, Joannis, Bull. S. E. France, 1899, p. 198 (fig.); Hampson, A. M. N. H. (8) i. (1908) p. 486.

Seychelles.—Eight specimens (6 ♂, 2 ♀). Of these, seven are from Praslin in November 1905, and one is from Cascade Estate, Mahé, in November 1906 (*de Gaye*).

Previously only known from Praslin, this species is now shown to occur in Mahé also.

Distribution.—Seychelles (Mahé, Praslin).

109. *Bradina admixtalis*, Wlk.

Botys admixtalis, Walk., Cat. xviii. p. 665.

Bradina admixtalis, Moore, Lep. Ceylon, iii. t. 180. f. 13; Hampson, Moths Ind. iv. p. 227; Pag., Lep.-Het. Madag. p. 132; Hampson, A. M. N. H. (8) i. (1908) p. 477.

Chagos.—Twelve specimens (7 ♂, 5 ♀), all from Salomon Atoll. In Ile de la Passe

it was noted on 22 June as "abundant but worn"; it is noteworthy that it was not found in any of the other islands of the Chagos group.

Distribution.—Gold Coast; Liberia; Kumasi; Natal; Nyasaland; Mayotta; throughout India; Ceylon; Maldives; Nicobars; Burma; Singapore; Hainan; Japan; Java; Bali; Queensland.

110. *Mabra eryxalis*, Wlk.

Asopia eryxalis, Walk., Cat. xvii. p. 371.

Mabra eryxalis, Moore, Lep. Ceylou, iii. t. 179. f. 4; Hampson, Moths Ind. iv. p. 240, f. 145.

Chagos.—A single specimen from Egmont Is.

Distribution.—India; Burma; Ceylon; Singapore; Sarawak; Sumatra.

111. *Sufetula minimalis*, sp. n. (Plate 17. fig. 7.)

♂. Exp. 10 mm. Labial palpi upturned, second joint moderately scaled and almost reaching vertex; third joint long, acuminate; greyish, apices of segments banded with fuscous. Maxillary palpi long, dilated with scales; greyish, banded with fuscous. Head, thorax, and abdomen greyish-fuscous, abdomen suffused with fuscous on base of segments; a long fuscous anal tuft. Antennæ shortly ciliated, greyish-fuscous. Legs greyish-fuscous; tibiae, spurs, and tarsi broadly annulated with darker.

Fore wing pale grey, with a few scattered fuscous scales; costa broadly suffused with dark fuscous, cut by a narrow pale streak at $\frac{1}{3}$ and by three small pale crescents whose apices lie on the costa, the first at $\frac{1}{2}$, the third at about $\frac{4}{5}$, and the second midway between the first and third; a small blackish-fuscous apical triangle whose base lies on costa; a conspicuous blackish-fuscous spot on discocellulars, touching subcostal suffusion; a narrow transverse dark-fuscous striga, outwardly oblique from below costal suffusion at about $\frac{4}{5}$ to vein 6, thence incurved to dorsum, which it reaches at about $\frac{4}{5}$; a broad fuscous terminal suffusion, less marked along vein 6; termen sharply outlined in blackish-fuscous. Cilia pale fuscous; a blackish-fuscous apical patch on costa and with darker basal patches on terminations of nervures.

Hind wing pale greyish-fuscous; a blackish discocellular speck; outer half of wing indistinctly suffused with fuscous, tending to form transverse bands. Cilia greyish-fuscous, darker basally.

Coetivy.—A single male taken on the wing at sunset in the marsh behind the settlement. The species also occurs in the Seychelles.

112. *Zinckenia fascialis*, Cram.

Phalena fascialis, Cram., Pap. Exot. iv. t. 398. f. O (1783).

Hydrocampa albifascialis, Boisd., Faun. Mad. Maur. p. 119, t. 16. f. 7 (1833).

Spoladea recurvalis, Guenée, Maill. Réunion, Léop. p. 62 (1863)

Zinckenia recurvalis, Joannis, Ann. S. E. France, 1894, p. 437.

Zinckenia fascialis, Hampson, Moths Ind. iv. p. 262, f. 158; Pag., Lep.-Het. Madag. p. 133 (1907); Hampson, A. M. N. H. (8) i. (1908) pp. 478, 484.

Chagos.—Eleven examples from Salomon (I. Anglaise, I. de la Passe), Peros Banhos (I. Diamant, I. du Coin), and Diego Garcia.

Chagos specimens have a noticeably paler area on the hind wing fringing the exterior edge of the white transverse fascia. This, however, cannot be looked on as a form peculiar to the Chagos group, as it is a variable character frequently exhibited by specimens from many diverse localities throughout the whole range of the species.

Coetivy.—Five specimens, September 1905. Common in shady bushy places.

Farquhar I.—One only, in South Island, 29 September, 1905.

D'Arros.—Not found by me, but noted by Dr. Holland as obtained there by Dr. Abbott (Proc. U.S. Nat. Mus. 1895, p. 273).

Seychelles.—Two from Mahé. Also recorded from Platte I.

Marie Louise I. (Amirantes). One specimen, collected by Mr. Dupont.

Distribution.—Texas; Central America; W. Indies; S. America; throughout Africa; Aden; Syria; Sokotra; Réunion; Mauritius; Madagascar; Comoros; Aldabra; Gloriosa; Farquhar I.; Amirantes (Marie Louise, D'Arros); Coetivy; Seychelles (Mahé, Platte); throughout India; Burma; Assam; Ceylon; Maldives; Andamans; Chagos; Cocos-Keeling; Christmas Island; Java; Singapore; Timor Laut; throughout China; Japan; Korea; Amboina; Formosa; New Guinea to S.E. Australia; New Zealand; New Ireland; Pitcairn I.; Marquesas; Gilbert Is.; Samoa; Sandwich Is.

113. *Eurrhyarodes tricoloralis*, Zell.

Botys tricoloralis, Zeller, K. Vet.-Ak. Handl. (Mic. Caff.) p. 31 (1852).

Isopteryx abnegatalis, Moore, Lep. Ceylon, iii. t. 179. f. 7.

Eurrhyarodes tricoloralis, Hampson, Moths Ind. iv. p. 264.

Mauritius.—One specimen at Petite Rivière (400 feet), 18 August, 1905.

Seychelles.—Five specimens, all from Mahé.

Amirantes.—One specimen from Marie Louise I. (*Dupont*).

Distribution.—W. and S. Africa; Mauritius; Amirantes (Marie Louise I.); Seychelles (Mahé); India; Ceylon; Maldives; Java; Queensland; N. S. Wales; Fiji.

114. *Synclera traducalis*, Zell.

Eudiptis traducalis, Zeller, K. Vet.-Ak. Handl. (Mic. Caff.) p. 54 (1852).

Pagyda traducalis, Moore, Lep. Ceylon, iii. t. 182. f. 9; Hamps. Moths Ind. iv. p. 272.

Synclera traducalis, Joannis, Ann. S. E. France, 1894, p. 437.

Seychelles.—A single specimen from St. Anne I., December 1906 (*de Gaye*).

Distribution.—W. Indies; C. and S. America; throughout W., S., and E. Africa to Aden and Syria; Seychelles (Mahé, St. Anne, Cerf); throughout India to Ceylon; New Guinea.

115. *Ercta ornatialis*, Dup.

Spanista ornatialis, Dnp., Lép. France, viii. p. 207, t. 223. f. 8.

Stenia ornatialis, Guenée, Maill. Réunion, Lép. p. 63.

Hydriris ornatialis, Joannis, Ann. S. E. France, 1894, p. 437.

Ercta ornatialis, Hampson, Moths Ind. iv. p. 274; Semper, Schmett. Philipp. ii. t. 5. f. 11 (larva); Pag., Lep.-Het. Madag. p. 133 (1907).

Farquhar I.—One specimen, 30 September, 1905.

Seychelles.—Four specimens: one from Frigate I. (*Connor*); one from Mahé (Cascade Estate, 800 feet, 2 November, 1905); two from Praslin in November 1905.

Distribution.—Throughout S. America to the Southern United States; W. Indies; S. Europe; throughout Africa; Réunion; Farquhar I.; Comoros; Seychelles; N.W. India to Assam and Ceylon; Maldives; Nicobars; Java; S.E. Borneo; New Hebrides; Tahiti.

116. *Marasmia venilialis*, Wlk.

Asopia venilialis, Walk., Cat. xvii. p. 373.

Marasmia cicatricosa, Led., Wien. ent. Mon. 1863, p. 386, t. 12. f. 8.

Marasmia venilialis, Hampson, Moths Ind. iv. p. 276, f. 167.

Chagos.—Seven specimens (3 ♂, 4 ♀) from Salomon and Peros Banhos (I. Diamant, 19 May, when it was noted as "common amongst grass in damp places").

Coetivy.—Seven specimens (4 ♂, 3 ♀) in September.

Desroches.—Five specimens (3 ♂, 2 ♀). Common on 14 October.

Seychelles.—One male from Mahé, February 1907 (*de Gaye*).

Distribution.—W., C., E., and S. Africa to Natal; Mauritius; Amirantes (Desroches); Coetivy; Seychelles; throughout India; Ceylon; Chagos; Cocos-Keeling; Sumatra; Singapore; Queensland to S.E. Australia; Fiji; Solomons.

117. *Marasmia trebiusalis*, Wlk.

Asopia trebiusalis, Walk., Cat. xviii. p. 718.

Marasmia trebiusalis, Hampson, Moths Ind. iv. p. 276; A. M. N. H. (8) i. (1908) p. 486.

Seychelles.—Eight specimens: five from Cascade Estate, Mahé, 2 November, 1905; one from summit of Mt. Sebert (1000 ft.), 3 November, 1905; one from Cascade Forest, November 1905; one labelled "Cascade, March" (*de Gaye*).

Distribution.—W. Africa; Seychelles (Mahé, Cerf); N. India; Assam; Ceylon; Hongkong; Sarawak; Fiji; Sumatra.

Doubtless overlooked in S. and E. Africa, Java, and Malay Subregion.

118. *Marasmia trapezalis*, Gn.

Botys trapezalis, Guenée, Delt. et Pyr. p. 200.

Botys creonalis, Moore, Lep. Ceylon, iii. t. 180. f. 10.

Marasmia trapezalis, Hampson, Moths Ind. iv. p. 277; Joannis, Bull. Soc. Ent. Fr. 1899, p. 197; Hampson, A. M. N. H. (8) i. (1908) p. 486.

Seychelles.—Four specimens: one from Frigate Island (*Connor*); one from Mahé, November 1905; one from Mahé, November 1905 (*de Gaye*); and one female from Mahé, February 1907 (*de Gaye*)*.

Distribution.—S. America; W., S., and E. Africa; Seychelles (Mahé, Frigate I., Cerf); throughout India and Ceylon to China, Polynesia, and Australia.

* This last specimen may possibly be *Marasmia venilialis*, Wlk., ♀, but is in very poor state and headless.

119. *Syngamia abruptalis*, Wlk.

Asopia ? abruptalis, Walk., Cat. xvii. p. 371.

Syngamia abruptalis, Moore, Lep. Ceylon, iii. t. 178. f. 14; Hampson, Moths Ind. iv. p. 279.

Seychelles.—Three specimens, all from Mahé.

Distribution.—Gold Coast; Sierra Leone; N.W. Nigeria; Mashonaland; Br. E. Africa; Mauritius; Seychelles (Mahé); Sokotra; throughout India; Burma; Ceylon; Andamans; Queensland; Fergusson I.; Fiji.

120. *Syngamia floridalis*, Z.

Stenia floridalis, Zeller, Lep. Micropt. Caffr. p. 60 (1852).

Syngamia floridalis, Hampson, Moths Ind. iv. p. 280, f. 169.

Chagos.—Two specimens, both from Salomon: one taken in Ile de la Passe on 22 June, 1905; the other without exact data.

On the wing this moth mimics a small red coccinellid beetle which is also found here on *Scævola Kœnigii*. Its flight is rather slow and the outer black border is not seen at all, so that it gives the visual impression of a heavy-bodied insect with small scarlet black-spotted wings.

Distribution.—S. Africa; India; Burma; Ceylon; Java; Celebes; New Hebrides; Duke of York I.; Tahiti.

121. *Bocchoris inspersalis*, Zell.

Botys inspersalis, Zeller, K. Vct.-Ak. Handl. (Mie. Caff.) p. 33 (1852).

Desmia afflictalis, Guenée, Delt. et Pyr. p. 190, t. 5. f. 4.

Bocchoris inspersalis, Joannis, Ann. Soc. Ent. Fr. 1894, p. 436; Hampson, Moths Ind. iv. p. 284; Pag., Lep.-Het. Madag. p. 133 (1907).

Mauritius.—One specimen from Petite Rivière (400 feet), 18 August, 1905.

Distribution.—Throughout Africa; Mauritius; Madagascar; Seychelles (Mahé); Aden; India; Burma; Ceylon; Java; China; Japan.

122. *Nacoleia niphealis*, Wlk.

Botys niphealis, Walker, Cat. xviii. p. 638.

Botys epastalis, Swinhoc, P. Z. S. 1885, p. 874, t. 57. f. 13; Joannis, Ann. S. E. France, 1894, p. 436.

Nacoleia niphealis, Hampson, Moths Ind. iv. p. 313.

Chagos.—Eleven specimens from Salomon Atoll (Boddam I., 24 May; I. du Sel, 26 May; I. Anglaise, 31 May) and Peros Banhos.

Seychelles.—Two, one from Frigate Island (*Connor*), the other from Mahé, November 1905.

Distribution.—Sierra Leone; India (low country); Burma; Ceylon; Maldives.

123. *Nacoleia maculalis*, sp. n. (Plate 17. fig. 8.)

♂. Exp. 21 mm. Labial palpi upturned, thickly scaled; second segment whitish, third fuscous. Antennæ fuscous, minutely ciliated. Patagia with tuft of hair extending beyond metathorax. Posterior tibiæ with outer spurs half length of inner. Head,

thorax, and abdomen fuscous. Legs greyish, slightly irrorated with fuscous; fore leg without spurs on tibia, but with tuft of hair-scales on first tarsal joint.

Fore wing rather dark fuscous; a short transverse pale yellowish subbasal striga not reaching costa or dorsum; an indistinct transverse yellowish costal suffusion a little before $\frac{1}{2}$; a conspicuous quadrate yellowish-white spot in cell a little before $\frac{1}{2}$ of wing-length, preceded and followed by a patch of blackish scales; a yellowish spot on costa at $\frac{2}{3}$, prolonged into a yellowish-white transverse line, straight from costa to vein 5, bent outwards between veins 5 and 2, then sharply retracted inwards to lower angle of cell, thence bent transversely downwards to dorsum: cilia dark fuscous.

Hind wing dark fuscous, yellowish towards base and along costa; a blackish cellular spot and pale-yellowish postmedial line; a blackish terminal line: cilia dark fuscous.

Seychelles.—A single example taken in Praslin in November 1905, by Mr. J. Stanley Gardiner.

124. *Nacoleia vulgaris*, Gn.

Botys vulgaris, Guenée, Delt. et Pyr. p. 202, t. 6. f. 8.

Nacoleia vulgaris, Hampson, Moths Ind. iv. 315.

Nacoleia indicata, Joannis, Bull. Soc. Ent. France, 1899, p. 197.

Seychelles.—Four specimens; three from Mahé (*de Gaye*) and one from St. Anne Isld. on 26 October, 1905. Of these four examples one belongs to the typical bright yellow form, one is of a very dull yellow colour, and the other two are almost entirely suffused with blackish-fuscous.

Distribution.—W. Indies; S. America; throughout Africa; Seychelles (Mahé, St. Anne); throughout India; Burma; Ceylon; Andamans; Java; Singapore; W. China.

125. *Nacoleia chagosalis*, sp. n. (Plate 17. fig. 9.)

♂. Exp. 20 mm. Labial palpi light brown, white beneath, very thickly scaled, upturned, reaching vertex; second joint broadly angled with scales; terminal joint short and concealed by long scaling. Haustellum well developed, scaled basally. Antennæ finely ciliated, without tuft of scales at middle. Patagia with tuft of hair extending beyond metathorax.

Fore wing very pale ochreous-yellow; basal half of costa suffused with fuscous; a transverse blackish spot in disc at $\frac{1}{4}$ is produced to dorsum as an ill-defined outwardly-oblique line; a blackish dot in cell at $\frac{1}{3}$; a blackish transverse discocellular spot; a blackish undulated line commences below the costa and runs towards tornus as far as vein 4, where it is retracted inwards to a position below the discocellular spot and runs hence to dorsum as an outwardly-curved arch. Interspaces of nervures suffused with fuscous on termen especially towards tornus. Termen slightly suffused with fuscous, broadly so towards costa. Cilia concolorous with fore wing, on termen paler apically and suffused with fuscous medially.

Hind wing coloured as fore wing, but whitish costally to before apex; a blackish discal spot at $\frac{1}{3}$; a blackish postmedial line at $\frac{2}{3}$, commencing as a spot below vein 6, then



curved outwards between veins 5 and 2, thence continued transversely towards tornus. Termen lightly suffused with fuscous, especially towards costa. Cilia yellowish-white, on termen suffused with fuscous towards base.

Head, thorax, abdomen, and legs very pale ochreous-yellow. Hind tibia with outer anterior spur half length of inner.

Chagos.—Five specimens: one (type) taken in Ile de la Passe (Salomon) on 22 June, 1905; two others from Salomon Atoll without exact data; two from Egmont Atoll, July 1905.

Possibly a very pale local form of *N. vulgaris*, but it seems a distinct species.

126. *Nacoleia salomonalis*, sp. n. (Plate 17. fig. 10.)

Exp. 15 mm. Pale yellowish, with a few dark fuscous scales intermixed; frons suffused with fuscous; a dorsal blackish band across abdomen at $\frac{1}{3}$ and indications of a second band at about $\frac{3}{4}$.

Fore wing with scattered blackish-fuscous suffusion at base; a prominent black transverse sinuous antemedial line between $\frac{1}{4}$ and $\frac{1}{3}$; an incomplete annulus in cell and a discocellular annulus, the latter the more conspicuous and open tornad; four black costal spots between $\frac{1}{2}$ and apex and a fifth spot at apex; from the second of these spots runs a black postmedial line, sinuous from costa to vein 2, then retracted inwards to beneath discocellular annulus and thence sinuous to dorsum; exterior fourth of wing suffused with blackish-fuscous, less so towards apex and tornus: cilia fuscous, pale yellow beneath apex and at tornus.

Hind wing narrowly blackish at base; a blackish discocellular spot from which runs a sinuous blackish line enlarged on inner margin; a postmedial sinuous blackish line, beyond which the wing is suffused with blackish-fuscous, darker along anterior margin: cilia greyish-yellow, dark fuscous at base.

Intermediate between *marionalis* and *tiasalis*.

Chagos.—Three specimens; Ile de la Passe, 22 June, 1905, when it was noted as common.

127. *Nacoleia charesalis*, Wlk.

Botys charesalis, Walk., Cat. xviii. p. 709.

Botys molusalis, Forsayeth, Trans. Ent. Soc. 1884, p. 417 (early stages).

Nacoleia charesalis, Hampson, Moths Ind. iv. p. 319; Joannis, Bull. Soc. Ent. France, 1899, p. 198.

Seychelles.—Mahé, two specimens; one taken at Cascade Estate (800 feet) on 2 November, 1905, the other received from Mr. de Gaye without exact data.

Distribution.—Seychelles (Mahé); India; Ceylon; Singapore; Sumbawa; Borneo; Philippines.

128. *Sylepta sabinusalis*, Wlk.

Botys sabinusalis, Walk., Cat. xviii. p. 708.

Nolarcha dubia, Hampson, Ill. Het. viii. p. 136, t. 155. f. 16.

Sylepta sabinusalis, Hampson, Moths Ind. iv. p. 333.

Coctivy.—Five specimens in September 1905.

Distribution.—Throughout Africa; N. India; Assam; Nilgiris; Ceylon; Java; Celebes; Sumbawa; Borneo; New Britain; Solomons; Fiji.

129. *Sylepta derogata*, Fb.

Phalana derogata, Fab., Syst. Ent. p. 641.

Sylepta multilinealis, Guenée, Delt. et Pyr. p. 337, t. 8. f. 11; Hampson, Moths Ind. iv. p. 334; Semper, Schmett. Philipp. ii. t. V. f. 1 (larva).

Botys basipunctalis, Bremer, Lep. Ost-Sib. p. 68, t. 6. f. 8.

Sylepta derogata, Hampson, A. M. N. H. (8) i. (1908) p. 487.

Seychelles.—Three specimens, all from Mahé (*de Gaye*). The only one with exact data is labelled "Mahé, Dec. 1906."

Distribution.—S. America; W. and S. Africa; Seychelles (Mahé, Cerf); throughout India; Burma to China, Japan, and E. Siberia; Ceylon; Maldives; Andamans; Singapore; Malayan Subregion; Australian Region.

130. *Sylepta straminea*, Butl.

Sylepta straminea, Butl., A. M. N. H. (4) xvi. (1875) p. 416; Hampson, Journ. Bombay N. H. Soc. xviii. p. 581 (1908).

Farquhar Is.—One very worn and scaleless specimen is apparently referable to this species.

Desroches.—Specimens from Desroches resemble examples of *S. straminea* in the National Collection except in having an ill-defined undulate subterminal fuscous clouding to both wings. The short series in the British Museum, however, is sufficiently variable *inter se* for me to regard this difference as only varietal and possibly individual.

Distribution.—Natal; Farquhar I.; Desroches (Amirantes); Ceylon.

131. *Glyphodes sericea*, Drury.

Phalana sericea, Drury, Ins. ii. p. 9, t. 6. f. 1 (1770).

Botys thalassinalis, Boisd., Faun. Mad. Maur. p. 117, t. 16. f. 6.

Margarodes sericeotalis, Guenée, Maill. Réunion, Lép. p. 65.

Botys sericea, Joannis, Ann. S. E. France, 1894, p. 435.

Glyphodes sericea, Pag., Lep.-Het. Madag. p. 135 (1907); Hampson, A. M. N. H. (8) i. (1908) p. 487.

Seychelles.—Two specimens from Mahé. Larva found in St. Anne Island in rolled-up leaves of oleander (*de Gaye*).

Distribution.—W. Africa; Sudan; Mashonaland; Natal; E. Africa; Madagascar; Seychelles (Mahé).

132. *Glyphodes unionalis*, Hb.

Botys unionalis, Hübn., Eur. Schmett., Pyr. f. 132.

Botys quinquepunctalis, Boisd., Faun. Mad. Maur. p. 117, t. 16. f. 5; Guenée, Maill. Réunion, Lép. p. 65.

Margarodes transvisalis, Guenée, Delt. et Pyr. p. 304.

Margarodes unionalis, Joannis, Ann. S. E. France, 1894, p. 436.

Glyphodes unionalis, Hampson, Moths Ind. iv. p. 351.

Mauritius.—One specimen (*de Gaye*).

Distribution.—S. Europe; Asia Minor; Teneriffe; W. Africa; Natal; Mauritius; Réunion; Madagascar; Seychelles (Mahé); Aden; throughout India; Assam; Ceylon; New Guinea; Australia.

133. *Glyphodes stolalis*, Gn.

Glyphodes stolalis, Guenée, Delt. et Pyr. p. 293, t. 3. f. 11; Hampson, Moths Ind. iv. p. 354.

Seychelles.—Three specimens: one from Long Island (*de Gaye*); one from Silhouette, end of September 1905 (*Thomasset*); one from Round Island, December 1906 (*de Gaye*).

A well-marked local form of *G. stolalis*, constantly distinct in wanting the narrow fuscous line bisecting either of the first two yellow transverse fasciæ of the fore wing. Most examples of *G. stolalis* from other localities have both these transverse yellow fasciæ bisected longitudinally by a darker line commencing on the costa and often reaching to the dorsum of the fore wing. Occasionally this darker line is absent from the first (basal) fascia, but is very rarely absent from the second. A single specimen (one of several from New Guinea) in the National Collection, however, has both these strigæ unslit, and therefore I do not consider the Seychelles form worthy of a name as a distinct geographical race.

Distribution.—Natal; Br. E. Africa; Seychelles (Mahé, Round I., Silhouette); throughout India; Assam; Ceylon; Sumatra; Pulo Laut; Sarawak; New Guinea; New Hebrides.

134. *Glyphodes subamicalis*, sp. n. (Plate 17. fig. 11.)

♂. Exp. 31 mm. Shape and markings precisely as in *G. amicalis*, Swinh., but the vitreous-whitish antemedial bar on fore wing is much narrower, and the postmedial broad whitish bar, which in *G. amicalis* reaches from the costa to below vein 3, is here reduced to a subcostal spot only bounded by veins 4 and 8.

Hind wing as in *amicalis*, the white median patch being only slightly reduced.

Seychelles.—A single male specimen taken in Port Victoria, Mahé, by Mr. J. A. de Gaye on 11 May, 1906.

Distribution.—Seychelles (Mahé).

G. amicalis, of which the present species is obviously a geographical form, is recorded from Dar-es-Salaam, Durban, and E. Africa.

135. *Glyphodes sinuata*, Fb.

Phalæna sinuata, Fab., Spec. Ins. ii. p. 267.

Botys sinuata, Joannis, Ann. S. E. France, 1894, p. 436.

Glyphodes sinuata, Moore, Lep. Ceylon, iii. t. 183. ff. 2, 2a (larva); Hampson, Moths Ind. iv. p. 358; Pag., Lep.-Het. Madag. p. 135 (1907).

Seychelles.—Seven specimens, all from Cascade Estate, Mahé (600 feet and above), at various dates.

Distribution.—W., C., S., and E. Africa; Seychelles (Mahé); Nilgiris; Ceylon.

136. *Glyphodes indica*, Saunders.

Eudiotis indica, Saunders, Trans. Ent. Soc. 1851, p. 163, t. 12. ff. 5-7; Kirby, Handb. Lep. v. p. 267, t. 153. f. 2; Joannis, Ann. S. E. France, 1894, p. 436.

Botys hyalinalis, Boisd., Fann. Mad. Maur. p. 117 (1833) (*preocc.*).

Phakellura cucurbitalis, Guenée, Maill. Réunion, Léop. p. 64 (1863).

Glyphodes indica, Hampson, Moths Ind. iv. p. 360; Pag., Lep.-Het. Madag. p. 135 (1907); Hampson, A. M. N. H. (8) i. (1908) pp. 479, 487.

Chagos.—One specimen from Peros Banhos (I. Diamant, 19 May).

Coetivy.—Ten examples in September 1905. Found in pumpkin patches.

Seychelles.—Seventeen specimens from Mahé, Praslin, and Frigate Island.

Distribution.—W. Africa; Abyssinia; Aden; Sokotra; White Nile; Br. C. Africa; Br. E. Africa; Natal; Mashonaland; Mauritius; Mayotta; Coetivy; Seychelles; throughout India; Ceylon; Maldives; Chagos; Christmas I.; Java; W. China; Korea; Japan; Borneo; Gilolo; N. Guinea; Queensland to S.E. Australia; Fiji; Tahiti; Marquesas; Navigators' Is.; Fergusson I.

137. *Crocidolomia binotalis*, Zell.

Crocidolomia binotalis, Zeller, K. Vet.-Ak. Handl. (Mie. Caff.) p. 66 (1852); Hampson, Moths Ind. iv. p. 372.

Pionea comalis, Moore, Lep. Ceylon, iii. t. 179. ff. 2-2 b (larva).

Seychelles.—One specimen, in extremely poor condition, from Mr. de Gaye's collection.

Distribution.—S. Africa; Seychelles (Mahé); India; Burma; Ceylon; Java; Formosa; Norfolk I.; Australia.

138. *Hellula undalis*, Fb.

Phalæna undalis, Fab., Syst. Ent. p. 392.

Hellula undalis, Hampson, Moths Ind. iv. p. 373, f. 200; Pag., Lep.-Het. Madag. p. 136.

Seychelles.—Two specimens; Frigate I. (*Connor*).

Distribution.—N. America (Texas); W. Indies; S. Europe; Syria; Teneriffe; throughout Africa; Ascension; St. Helena; Aden; Sokotra; Madagascar; Comoro Is.; Seychelles (Frigate I.); throughout India; Burma; Ceylon; Christmas I.; China; Japan; Manila; Sandwich Is.

139. *Omphisa anastomosalis*, Gn.

Botys anastomosalis, Guenée, Delt. et Pyr. p. 373.

Botys illialis, Wlk.; Led., Wien. ent. Mon. 1863, t. 9. f. 12.

Omphisa anastomosalis, Joannis, Ann. S. E. France, 1894, p. 436; Hampson, Moths Ind. iv. p. 382, f. 207.

Seychelles.—Received from Mahé by M. de Joannis. The present collection contains no specimens.

Distribution.—Seychelles (Mahé); throughout India and Burma to Ceylon and Andamans; Java; China; Duke of York I.

140. *Isocentris seychellalis*, sp. n. (Plate 17. fig. 12.)

♂. Exp. 22 mm. Palpi porrect, densely scaled, third joint short; golden-yellow intermixed with pink and purple scales. Antennæ finely ciliated, yellow. Head and thorax yellow, the latter with some purple-red scales transversely arranged across prothorax and metathorax. Abdomen bright yellow, dorsal area irrorated with purple-red.

Fore wing bright yellow, with eight small purple-red spots on basal half, the first subcostal and subbasal, the second costal at $\frac{1}{4}$, the third in cell at $\frac{1}{4}$, the fourth on discocellulars, the fifth in disc below cell at $\frac{1}{4}$, and the sixth a little beyond fifth, the seventh on dorsum near base, and the eighth near dorsum at $\frac{1}{4}$. Exterior third of wing with a purplish-red patch (except round apex, which is yellow) incurved along vein 2 to about $\frac{3}{5}$, thence straight to dorsum. Cilia purplish-red.

Hind wing light yellow, a broad purplish-red terminal patch from apex to inner margin. Cilia purplish-red.

Seychelles.—A single specimen in very poor state from Mr. de Gaye's collection.

141. *Pachyzancla phæopteralis*, Gn.

Botys phæopteralis, Guenée, Delt. et Pyr. p. 349.

Botys otreusalis, Moore, Lep. Ceylon, iii. t. 180. f. 11; Joannis, Ann. S. E. France, 1894, p. 436.

Pachyzancla phæopteralis, Hampson, Moths Ind. iv. p. 402.

Seychelles.—Eight specimens, of which seven are from Mahé and one from Praslin.

Distribution.—S. America; throughout Africa; Aden; St. Helena; Mauritius; Seychelles (Mahé, Praslin); throughout India; Burma; Ceylon; Andamans; Solomon Is.

Probably in Madagascar, Nicobars, Java, Sumatra, and New Guinea, and possibly in Australia also, but I do not find any records from these localities.

142. *Pachyzancla mahensis*, sp. n. (Plate 17. fig. 13.)

♂. Exp. 23 mm. Labial palpi porrect, broadly triangularly scaled, third joint not visible; dark fuscous above, whitish below. Maxillary palpi short, filiform, inconspicuous, dark fuscous. Antennæ pale greyish-yellow, minutely ciliated. Head, thorax, and abdomen yellowish, collar with some dark fuscous scales. Pectus and legs pale yellowish-white.

Fore wing pale golden-yellow; costa broadly dark fuscous from base to about $\frac{4}{5}$; a small but conspicuous blackish cellular spot a little beyond $\frac{1}{4}$; a conspicuous blackish transverse spot on discocellulars; a transverse fuscous striga from costa at $\frac{4}{5}$, quite obsolete below vein 6; termen faintly suffused with fuscous, especially around apex; cilia pale yellowish, whitish at tips, faintly clouded with pale fuscous at base.

Hind wing pale golden-yellow; a conspicuous blackish discocellular spot; apex clouded with dark fuscous: cilia pale yellowish, whitish at tips.

Seychelles.—Two male specimens, both taken at Cascade Estate, Mahé, the first by myself on 2 November, 1905, the second by Mr. J. A. de Gaye in March 1907.

143. *Phlyctænodes massalis*, Wlk.

Scopula massalis, Wlk., Cat. xviii. p. 792.

Dosara colatalis, Wlk., Cat. xix. p. 829; Hampson, Ill. Het. ix. t. 172. f. 22; Joannis, Ann. S. E. France, 1894, p. 435.

Phlyctænodes massalis, Hampson, Moths Ind. iv. p. 408, f. 221; Pag., Lep.-Het. Madag. p. 137.

Coetivy.—Four specimens. Three without exact data, the fourth taken on 24 September, 1905, when the species was noted as readily taking to wing in the daytime and having a distinct partiality for tufts of grass.

Poivre.—Only one specimen taken, but the moth was fairly common.

D'Arros.—One specimen. Not common; over dry grass.

Desroches.—Four specimens. Abundant over short herbage.

Eagle I.—One specimen; 17 October, 1905. Noted as common.

Seychelles.—Six examples; five from Frigate Island (*Connor*), and one taken in St. Anne I. on 26 October, 1905.

Distribution.—Accra; Transvaal; Madagascar; Amirantes; Coetivy; Seychelles; N. India; Ceylon; Queensland; N. S. Wales.

This species will probably be found to have a very wide range, but it is inconspicuous and easily overlooked in the field.

144. *Antigastra catalaunalis*, Dup.

Botys catalaunalis, Dup., Lép. France, viii. p. 330, t. 232. f. 8.

Antigastra catalaunalis, Joannis, Ann. S. E. France, 1894, p. 436; Hampson, Moths Ind. iv. p. 412, f. 224; Hampson, Nat. Hist. Sokotra, p. 338; Pag., Lep.-Het. Madag. p. 137 (1907).

Seychelles.—Received by M. de Joannis from Mahé.

Distribution.—Europe; Syria; W. and E. Africa; Aden; Abd-el-Kuri; Comoro Is.; Seychelles (Mahé); India; Burma; Ceylon.

145. *Pyrausta mahensis*, sp. n. (Plate 17. fig. 14.)

♂. Exp. 26 mm. Labial palpi porrect, thickly and triangularly scaled, terminal joint not visible; fuscous above, white below. Antennæ as long as fore wing, very minutely ciliated. Head, thorax, and basal half of abdomen pale greyish-fuscous, anal half of abdomen dark fuscous. Legs pale greyish-fuscous; fore leg with large tuft of hair-like scales on fore tibia and with first tarsal joint clothed with long fuscous scales, other tarsal joints irrorated with fuscous; median leg dark fuscous on tibia and tarsi; posterior tibia with outer medial spur about half length of inner and approximately equal in length to both posterior spurs.

Fore wing very pale yellowish-grey irrorated with fuscous; costal margin strongly marked with dark fuscous; termen rather broadly margined with dark fuscous suffusion; a dark fuscous transverse striga at $\frac{1}{4}$; a blackish-fuscous cellular dot touching vein 8 at $\frac{1}{3}$ of wing-length; a blackish-fuscous discocellular bar prolonged to dorsum as a dark fuscous outwardly-waved striga; an outwardly-oblique dark fuscous curved striga from costa at about $\frac{3}{4}$ running into termen at termination of vein 2: cilia greyish-fuscous, darker at base.

Hind wing very pale yellowish-grey irrorated posteriorly with fuscous; an antemedial dark-fuscous cellular bar prolonged to tornus as an outwardly-curved striga; a dark-fuscous striga from costa at $\frac{2}{3}$ to termination of vein 2; termen strongly suffused with dark fuscous: cilia greyish-fuscous, darker at base, grey-white at tornus and along dorsum.

Seychelles.—Five specimens: three taken in jungle above Cascade Estate, Mahé, November 1905; two received from Mr. J. A. de Gaye, one labelled "Cascade, March," the other "Cascade Forest, March."

In its build, pattern of markings, and general appearance this species much resembles a *Stenia*, but only veins 8 and 9 of the fore wing are branched, 10 running out of cell parallel to 9.

Distribution.—Seychelles (Mahé).

Family Pterophoridae.

146. *Trichoptilus defectalis*, Wlk.

Pterophorus defectalis, Walk., Cat. xxx. p. 943.

Pterophorus congrualis, Walk., Cat. xxx. p. 943.

Trichoptilus oxydactylus, Walsm., Faun. Hawaii Micro-Lep. t. 10. f. 3 (1907).

Trichoptilus congrualis, Fletcher, Spol. Zeylan. vi. p. 28, t. A. f. 8, & t. F. figs. 2, 3 (larva, pupa) (1909).

Chagos.—Nine examples, eight from Salomon (1 ♂, Boddam I., 24 May; 3 ♂, I. Anglaise, 31 May; 1 ♀, I. de la Passe, 22 June; 3 ♀ without exact data) and one ♂ from Peros Banhos (I. du Coin, 25 June).

Coetivy.—Ten specimens; noted as fairly common on 10 September, and as abundant on 24 September.

Farquhar I.—Seventeen specimens. Locally abundant in North Island, 1 October.

Poivre.—Four specimens. Common, 10 October, 1905.

D'Arros.—Four specimens; 13 October. Not common.

Desroches.—Four specimens; 14 October. Abundant.

Eagle I.—Three specimens; 17 October. Abundant everywhere.

Distribution.—Florida; W. Indies; Peru; W., S., and E. Africa; Mauritius; Farquhar I. Amirantes; Seychelles (Dennis I.); Coetivy; Sokotra; Chagos; Ceylon; throughout India to China and New Guinea; Queensland.

In Ceylon I have found the larva on *Boerhavia repens*, but probably it has other food-plants also.

147. *Sphenarches caffer*, Zell.

Oxyptilus caffer, Zeller, Linn. Ent. vi. p. 348.

Sphenarches caffer, Walsm., Indian Mus. Notes, ii. p. 20 (figs.); Fletcher, Spol. Zeylan. vi. p. 21, t. E. f. 10, t. F. f. 1 (larva, pupa) (1909).

Seychelles.—One specimen from Mahé (*de Gaye*).

Distribution.—Throughout Africa; Seychelles (Mahé); India; Burma to Japan; Ceylon; Maldives; Australia; Sumatra.

148. *Platyptilia pusillidactyla*, Wlk.

Oxyptilus pusillidactylus, Walk., Cat. xxx. p. 933.

Platyptilia hemimetra, Meyrick, Trans. Ent. Soc. 1886, p. 18.

Platyptilia pusillidactyla, Fletcher, Spol. Zeylan. vi. p. 13, t. A. f. 2, t. E. ff. 5, 6 (larva, pupa).

Seychelles.—A single specimen taken in the Botanical Gardens, Port Victoria, Mahé, 31 October, 1905. Undoubtedly introduced with its food-plant (*Lantana Camara*).

Distribution.—W. Indies; Teneriffe; Réunion; Seychelles (Mahé); India; Ceylon; Hongkong; Honolulu.

149. *Exelastis liophanes*, Meyr.

Marasmarcha liophanes, Meyrick, T. E. S. 1886, p. 19.

Exelastis liophanes, Fletcher, Spol. Zeylan. vi. p. 33, t. A. f. 12 (1909).

Seychelles.—Eleven specimens from Mahé and St. Anne Island. Abundant from sea-level to about 1200 feet.

Distribution.—Barbados; Natal; Réunion; Seychelles; Ceylon; China (Fuchau).

This species is doubtless very widely distributed, but is inconspicuous and easily overlooked.

III. SYNOPSIS OF THE DISTRIBUTION-TABLE, SHOWING GEOGRAPHICAL AFFINITIES OF LEPIDOPTERA IN EACH GROUP OF ISLANDS.

Group of Islands.	Common to African, Indian, and Australian Regions.	Peculiar to African Region.	Mas-carenes.	Malagasy Islands and/or Madagascar.	Common to African and Indian Regions.	Peculiar to Indian Region.	Common to Indian and Australian Regions.	Peculiar to Australian Region.	Peculiar Forms.	Unplaced.	Total in each group.
Chagos	9	..	..	..	4	5	4	1	3	..	26
Coetivy	12	1	..	2	4	..	1	..	..	..	20
Seychelles ..	36	13	4	7	28	4	3	..	17	8	120
Amirantes ..	6	4	1	3	4	..	1	..	1	..	20
Farquhar and Providence .	9	2	..	2	4	..	..	..	1	..	18

Name.	Africa.	Mascarenes.	Madagascar.	Farquhar and Providence.	Amirantes.	Coetivy.	Seychelles.	Sokotra.	Maldives.	Ceylon.	Chagos.	Coros-Keeling.	Christmas Island.	Sunatra and Java.	Australia and New Guinea.	Summary of Distribution.
SPHINGIDÆ.																
50. <i>Herse convoluti</i>	×	×	×	×	×	×	×	×	Afr., Ind., Austr. Indian Region.
51. <i>Acherontia lachesis</i>	×	×	×	×	×	..	Europe, Afr. African Region.
52. " <i>atropos</i>	×	×	×	×	×	African Region.
53. <i>Cephonodes hylus virescens</i> ..	×	..	×	..	×	×	×	Ind., Austr.
54. " <i>picus</i>	×	×	×	×	×	×	×	×	×	×	Afr., Ind.
55. <i>Deilephila nerii</i>	×	×	×	×	×	E. African Islands.
56. <i>Temnora fumosa peckoveri</i>	×	×	Ind., Austr.
57. <i>Macroglossum corythus</i>	×	×	×	×	×	Seychelles.
58. " <i>alluaudi</i>	×	×	×	Ind., Austr.
59. <i>Hippotion velox</i>	×	×	..	×	×	×	Afr., Ind., Austr.
60. " <i>celerio</i>	×	×	×	×	×	×	×	×	African Region.
61. " <i>osiris</i>	×	..	×	×	Malagasy Islands.
62. " <i>aurora</i>	×	×	?	×	Malagasy Islands.
63. " <i>eson</i>	×	×	×	×	African Region.
GEOMETRIDÆ.																
64. <i>Petrodava lucicolor</i>	×	..	×	×	African Region.
65. <i>Iodis stibolepida</i>	×	..	×	×	African Region.
66. <i>Gymnoscelis</i> sp.	×	Amirantes.
67. <i>Chloroclystis metallicata</i>	×	×	E. African Islands.
68. " sp.	×
69. <i>Craspedia minorata</i>	×	×	..	×	..	×	×	×	..	×	Afr., Ind.
NYMPHALIDÆ.																
70. <i>Danaus chrysippus</i>	×	×	×	×	×	..	×	×	..	Afr., Ind.
71. <i>Euplœa mitra</i>	×	Aldabra, Seychelles.
72. <i>Melanitis leda</i>	×	×	×	×	×	×	×	Afr., Ind., Austr.
73. <i>Junonia vellida</i>	×	×	×	×	×	Australian Region.
74. <i>Pyrameis cardui</i>	×	×	×	×	×	×	×	×	×	World-wide.
75. <i>Hypolimnas bolina</i>	×	×	×	×	Indian Region.
76. " <i>missippus</i>	×	×	×	×	×	×	×	×	×	×	Afr., Ind.
77. <i>Ateila phalantha</i>	×	×	×	?	×	..	×	×	..	Afr., Ind.
78. " <i>philiberti</i>	×	Aldabra, Seychelles.
PAPILIONIDÆ.																
79. <i>Papilio disparilis</i> , var. <i>nana</i>	×	Seychelles.
PIERIDÆ.																
80. <i>Catopsilia florella</i>	×	×	×	?	×	..	×	Afr., Ind.
81. <i>Teracolus aldabrensis</i>	?	Aldabra.
LYCÆNIDÆ.																
82. <i>Zizera maha</i>	×	Indian Region.
83. " <i>lysimon</i>	×	×	×	×	×	×	..	×	×	..	Afr., Ind.
84. " <i>guika</i>	×	×	..	?	?	..	?	×	×	×	×	×	Afr., Ind.
85. <i>Polyommatus bæticus</i>	×	×	×	×	×	×	×	Afr., Ind., Austr.
86. <i>Syntarucus telicanus</i>	×	×	×	..	×	..	×	African Region.
HESPERIIDÆ.																
87. <i>Eagris sabadius</i>	×	×	×	E. African Islands.
88. <i>Parnara borbonica</i>	×	×	×	×	African Region.
89. " <i>morella</i>	×	Seychelles.
90. " <i>gemella</i>	×	..	×	..	×	Malagasy Islands.
91. " <i>poutieri</i>	×	×	Madagascar.
92. " <i>marchalii</i>	×	?	Manritius.
93. <i>Rhopalocampa arbogastes</i>	×	×	×	E. African Islands.

Name.	Africa.	Mascarenes.	Madagascar.	Farquhar and Providence.	Amirantes.	Coëtyv.	Seychelles.	Sokotra.	Maldives.	Ceylon.	Chagos.	Coros-Keeling.	Christmas Island.	Sumatra and Java.	Australia and New Guinea.	Summary of Distribution.
PYRALIDÆ.																
94. <i>Corecya cephalonica</i>	×	×	×	×	World-wide.
95. <i>Culladia admigratella</i>	×	×	×	×	..	×	×	×	..	Afr., Ind.
96. <i>Crambus seychelleilus</i>	×	Seychelles.
97. <i>Cirrhochrista perbrunnealis</i>	×	Seychelles.
98. <i>Ephesia cautella</i>	×	×	×	×	World-wide.
99. <i>Heterographis insularella</i>	×	×	Seychelles.
100. <i>Phycita</i> sp.	×	Seychelles.
101. <i>Etiella zinckenella</i>	×	×	×	×	×	..	×	×	×	World-wide.
102. <i>Endotricha chagosalis</i>	×	×	Chagos.
103. " <i>mesenterialis</i>	×	×	×	×	..	Indian Region.
104. " sp.	×	..	×	Malagasy Isds.
105. " <i>violentalis</i> ..	×	African Region.
106. <i>Pyralis manihotalis</i>	×	×	×	×	×	×	World-wide.
107. " <i>farinalis</i>	×	×	×
108. <i>Bradina anreotalis</i>	×	Seychelles.
109. " <i>admixtalis</i>	×	×	×	×	×	×	Afr., Ind., Austr.
110. <i>Mabra eryxalis</i>	×	×	×	×	..	Indian Region.
111. <i>Sufetula minimalis</i>	×	×	×	Malagasy Isds.
112. <i>Zinckenia fascialis</i>	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×	World-wide.
113. <i>Eurhyparodes tricoloralis</i> ..	×	×	×	×	×	×	×	×	×	Afr., Ind., Austr.
114. <i>Synclera traducalis</i>	×	×	×	Afr., Ind.
115. <i>Ercta ornatalis</i>	×	×	..	×	×	×	×	×	..	World-wide.
116. <i>Marasmia venialis</i>	×	×	×	×	×	×	×	..	×	×	Afr., Ind., Austr.
117. " <i>trebuisalis</i>	×	×	×	×	×	×	Afr., Ind.
118. " <i>trapezalis</i>	×	×	×	World-wide.
119. <i>Syngamia abruptalis</i>	×	×	×	×	×	×	Afr., Ind., Austr.
120. " <i>floridalis</i>	×	×	×	×	..	Afr., Ind.
121. <i>Bacchoris dispersalis</i>	×	×	×	×	×	×	×	..	Afr., Ind.
122. <i>Nacoleia niphealis</i>	×	×	×	×	×	Afr., Ind.
123. " <i>maculalis</i>	×	Seychelles.
124. " <i>vulgalis</i>	×	..	×	×	×	×	..	Afr., Ind.
125. " <i>chagosalis</i>	×	×	Chagos.
126. " <i>salomonalis</i>	×	×	Chagos.
127. " <i>chaesalis</i>	×	×	×	Indian Region.
128. <i>Sylepta sabinusalis</i>	×	×	×	×	×	×	×	Afr., Ind.
129. " <i>derogata</i>	×	×	×	×	×	×	×	×	World-wide.
130. " <i>straminea</i>	×	×	×	×	×	Afr., Ind.
131. <i>Glyphodes sericea</i>	×	..	×	×	African Region.
132. " <i>unionalis</i>	×	×	×	×	×	×	×	×	Afr., Ind., Austr.
133. " <i>stolalis</i>	×	×	×	×	×	×	Afr., Ind.
134. " <i>subamicalis</i>	×	Seychelles.
135. " <i>sinuata</i>	×	×	×	×	Afr., Ind.
136. " <i>indica</i>	×	×	×	×	×	×	×	×	×	×	×	×	Afr., Ind., Austr.
137. <i>Crocidolomia binotalis</i>	×	×	×	×	×	×	×	×	Afr., Ind., Austr.
138. <i>Hellula undalis</i>	×	..	×	×	×	×	×	×	×	×	Afr., Ind.
139. <i>Omphisa anastomosalis</i>	×	×	×	..	Indian Region.
140. <i>Isocentris seychellalis</i>	Seychelles.
141. <i>Pachyzancla phæopteralis</i> ..	×	×	×	×	×	Afr., Ind.
142. " <i>makensis</i>	×	Seychelles.
143. <i>Phlyctenodes massalis</i>	×	..	×	..	×	×	×	×	×	×	×	Afr., Ind., Austr.
144. <i>Antigastra catalaunalis</i>	×	×	×	..	×	×	Afr., Ind.
145. <i>Pyrausta makensis</i>	×	Seychelles.
PTEROPHORIDÆ.																
146. <i>Trichoptilus defectalis</i>	×	×	..	×	×	×	×	×	..	×	×	×	World-wide.
147. <i>Sphenarches caffer</i>	×	×	×	×	×	×	×	×	×	Afr., Ind., Austr.
148. <i>Platyptilia pusillidactyla</i>	×	×	×	×	×	×
149. <i>Ecelastis kophanes</i>	×	×	×	×	×

V. ON THE DISTRIBUTION OF THE LEPIDOPTERA IN THE ISLANDS OF
THE INDIAN OCEAN.

CHAGOS.

From an entomogeographical point of view the Chagos Archipelago is by far the most interesting of the groups of islands which we visited. Situated in the middle of the Northern Indian Ocean, separated from the nearest land * by 240 miles of open sea, and encircled by ocean-depths of over 2000 fathoms, these islands yield a problem of peculiar fascination in the study of the forms of insects found in them, as possibly affording some indication of the manner in which they have arrived at so remote a spot. With this object in view I have attempted the following analysis of the non-endemic Lepidoptera.

(1) Species common to the African, Indian, and Australian regions:—*Prodenia littoralis*, *Remigia frugalis*, *Plusia chalcytes*, *Cosmophila erosa*, *Bradina admixtalis*, *Zinckenia fascialis*, *Marasmia venialialis*, *Glyphodes indica*, *Trichoptilus defectalis*. Of these, all occur in Ceylon and probably all in Sumatra-Java also. As the Chagos fauna contains no elements of an exclusively African character, we can omit Africa as the original home of the above-named species. Granting a possible derivation from Ceylon via the Maldives for numbers 5, 6, and 8, and omitting *T. defectalis*, whose distribution is insufficiently known, we are left with the fact that the remaining five species (nos. 1-4, 7) are all found either in Christmas Island or in the Cocos-Keeling group, a fact which seems to point to their original entrance into the Chagos by way of these other islands from the Malayan or Australian regions.

(2) Species common to the African and Indian regions:—*Eriopus maillardi*, *Culladia admigratella*, *Syngamia floridalis*, *Nacoteia niphealis*. Of these, the first three are found in Ceylon and in Sumatra-Java, and may have gained an entrance into the Chagos from either direction. I think it unlikely that any of them are derived direct from Africa; certainly *Syngamia floridalis*, which is a particularly conspicuous species, has not been recorded from any of the East African Islands. *N. niphealis* may be assumed to have come from Ceylon through the Maldives, and in connection with this assumption it is interesting to note that the present distribution of *niphealis* in the Chagos Archipelago (Peros Banhos and Salomon Atolls only) may possibly point to its recent introduction from a northerly rather than from a south-easterly direction.

(3) Species peculiar to the Indian region:—*Ophiusa honesta*, *Acherontia lachesis*, *Hypolimnas bolina*, *Endotricha mesenterialis*, *Mabra eryxalis*. All of these occur in Ceylon. *E. mesenterialis* has doubtless come through the Maldives. The other four (of which three are very large and conspicuous forms, not likely to have been overlooked in the Maldives) may have come from either direction.

(4) Species common to the Indian and Australian regions:—*Utetheisa pulchelloides* †,

* Addu Atoll, the southermost of the Maldive Group.

† *U. pulchelloides* seems to belong properly to the Indo-Australian region, although it is found as far west as Cargados Carajos, the Amirantes, and Seychelles (but not in Africa or Madagascar, so far as is known at present).

Macroglossum corythus, *Cephonodes picus*, *Hippotion velox*. These may have come direct from Ceylon or from the Malayo-Australian region *viâ* Cocos-Keeling. It seems obvious that the Maldives have not been the means of communication, as none of these species are found in that group, a fact which lends support to the idea that they have come in from the south-eastward.

(5) Species peculiar to the Australian region:—*Junonia vellida*. This butterfly seems to be a native of Australia, whence it has spread into the southern part of the Malayan region. There is at least no doubt as to the direction whence it has immigrated into the Chagos, which at present forms its extreme western habitat.

To sum up the foregoing: out of 23 Chagos Lepidoptera, not peculiar to this group of islands, we have:—

- 5 which occur in Ceylon and the Maldives and may therefore be assumed to have immigrated along that line.
 - 1 which is Australian and which has almost certainly arrived *viâ* Christmas Island and Cocos-Keeling.
 - 16 which occur in Ceylon and Sumatra-Java or Australia (of these six are found in Cocos-Keeling and two others in Christmas Island). These may have come direct from Ceylon or from the Malayo-Australian region, but the probabilities seem to favour the latter route since none of them have been found in the Maldives.
 - 1 whose range is insufficiently known.
-
- 23 ... Total.
-

COETIVY.

There are no species peculiar to the Indian, Indo-Australian, or Australian regions.

Of the twenty species recorded all except six (*Chloridea armigera*, *Eublemma ragusana*, *Hippotion celerio*, *Hippotion aurora*, *Coreyra cephalonica*, *Sylepta sabinusalis*) have been found in the Seychelles, and of these *C. cephalonica* may be omitted as introduced by man. The remaining five are found in the African or Malagasy regions and have doubtless been derived thence.

It is interesting to note the entire absence of butterflies in Coetivy, a condition found also in the wasps and land-birds of this island. Yet Coetivy is situated at a distance of only 90 miles from Platte Island, in which Dr. Abbott found at least two species of butterfly, so that the absence of butterflies in Coetivy appears inexplicable from the mere point of view of distance. A probable explanation is to be found in the fact that the south-easterly wind, which blows fairly freshly and steadily from about May to November, is sufficient to overcome any powers of flight from a northerly direction (*i. e.*, Platte or Seychelles) at this time of the year, whilst the north-westerly wind prevailing from December to April is weaker and more fitful and also blows during the wet season, so that any bird, wasp, or butterfly blown offshore from the Seychelles in a southerly direction during that period would probably become rain-clogged and drowned before it had gone very far. Cyclones are also of rare occurrence in this area. Whether the theory here advanced is correct or not, it may be useful to draw attention to the influence of rainfall in diminishing the dispersal-capacity of a prevailing wind.

FARQUHAR, PROVIDENCE, AND THE AMIRANTE ISLANDS.

The dispersal of the Lepidoptera of these groups calls for little comment, as all the species appear to have been derived from the African fauna. The only exception is *Uteheisa pulchelloides*, which, as already noted on page 317, seems to be here a straggler from the Indo-Australian region.

SEYCHELLES.

The Synopsis of the Distribution-Table shows a large African element, but a few species have not been found up to the present in the African region. They are:—*Uteheisa pulchelloides*, *Chasmina sericea*, *Eutelia inextricata*, *Argina astrea*, *Zizera maha*, *Nacoleia charesalis* and *Omphisa anastomosalis*.

Of these *U. pulchelloides* seems to belong properly to the Indo-Australian region, but has been spread, doubtless by cyclones, to Cargados and the Amirantes. It is not known at present from Madagascar, the Mascarenes, or the African mainland.

Chasmina sericea is eminently the insular representative of its genus, being widely distributed amongst the islands of the Indian and Pacific Oceans. Its life-history is quite unknown, so that it is difficult to hazard a guess as to its means of transport.

Eutelia inextricata appears to be a truly Indian species, replacing in that region the closely-allied *E. delatrix* of the African fauna. It is difficult to trace its arrival in the Seychelles, unless it has come direct from India or Ceylon.

Argina astrea is known from Madagascar and the Mascarenes, but not from the African mainland. Perhaps it has been introduced by man from India.

Zizera maha is at present a rather doubtful member of the list, being included in the Seychelles fauna on the strength of a single specimen, which I shall not be surprised to find was incorrectly identified.

The two Pyralids may represent a true Indian element in the Seychelles fauna, but it seems premature to assert it as a fact that they do so, since the Pyralidæ of Madagascar are very little known; Saalmüller's work was left unfinished and the collection which Herr Pagenstecher has lately described seems to have contained very few examples of the smaller moths.

VI. ON THE MEANS OF DISPERSAL OF LEPIDOPTERA IN THE ISLANDS OF THE INDIAN OCEAN.

So far as the Lepidoptera are concerned, we have to deal with five possible means of dispersal:—(i.) Prevailing Winds; (ii.) Storms; (iii.) Marine Currents; (iv.) Birds; (v.) Human Agency.

Prevailing Winds form a great factor in the distribution of many species of Lepidoptera, particularly in the case of islands situated at comparatively short distances (of not more than a few hundred miles) from the mainland or from one another. It must be remembered that these winds blow constantly and strongly in the same direction for months at a time.

Only one who has lived for a long period in a ship or similar situation off the coast of a tropical country can form any idea of the immense numbers of insects which are daily blown off shore by a monsoon wind; very few of these have any chance of regaining the shore and the vast majority must perish in the sea. Some, indeed, are species of such weak flight that it seems a marvel that they can ever have attained the distances that they do accomplish from the nearest land, and that they do so can only be ascribed to the fact that they are almost entirely wind-borne.

I am inclined to think that winds form the greatest factor in the ordinary dispersal of most winged insects, if we may use the term "ordinary" in discussing the very slender chances of any individual wind-carried insect happening to hit upon a minute speck of islet in mid-ocean.

Storms can hardly be considered apart from Prevailing Winds, of which they are often only an exaggeration and to whose effects they are frequently accessory.

In the case of Christmas Island* we have definite evidence that insects are introduced by winds, but in this particular case these so-called storms appear to be merely an exaggeration of a northerly wind which is more or less normal at that season of the year.

It appears to me that the real influence of storms on the dispersal of insects consists in an augmentation of the transporting-powers of an ordinary wind, either in carrying an insect a long distance in a very short time (in some of these storms the wind has been recorded at 100–120 or even more miles per hour), or, particularly in the case of cyclonic disturbances, by carrying it high up into the atmosphere, where it may be conveyed by the upper currents of the air for long distances, with very little expenditure of energy on its own behalf, before it finally falls again to the sea-level.

Marine Currents, although highly important in the conveyance of some other groups of animal life, seem to have played little if any part in the distribution of the Lepidoptera amongst the islands of the Indian Ocean. This seems to be proved by an inspection of the list of species obtained. It will be noted that this list includes no species possessing a female either wholly or partially apterous or even especially lethargic (e. g. *Ocneriadae*, *Psychida*, &c.). This fact appears to point to the usual method of transmission of species into these islands taking place in the imaginal state rather than in any other. For it is noteworthy that all these types, in which the female is normally apterous or lethargic, appear especially favoured for dispersal in the immature condition. For example, the Ocneriads usually lay an enormous number of eggs, which are not only very often covered with a waterproof varnish, but are generally deposited upon twigs or in the crevices of bark, and whose development in some cases takes place at intervals over long periods of time; whilst the Psychids possess, in their silken cases and agamogenetic proclivities, an apparently valuable asset against the dangers of the sea. Of course, the disuse and consequent eventual loss of wings *after* arrival in an island, as in the case of the semi-apterous Tineid moth found in Kerguelen by the 'Challenger' Expedition, belongs to another class of phenomena.

* 'Monograph of Christmas Island,' page 301.

It seems probable that the small influence of currents in the dispersal of the Lepidoptera is directly due to the length of time involved by this process, whereby ova or pupæ are practically certain to have emerged *en route* before accomplishing any great distance.

Birds may almost be omitted as a factor in the dispersal of the Lepidoptera except in so far as they carry some seeds and thus help to prepare the islands for the support of insects. A small Tineid moth, however, which was found in Cargados Carajos and which seemed to be associated with the sea-birds there, its larva probably feeding on their feathers or excrement, might possibly be transported in the egg state on their feathers.

Land-birds may also be agents in the distribution of insects, but in the case of remote islands I think they may be left out of account, as they seem to be dispersed mainly by winds and storms, which would be adequate in themselves to carry small forms of life.

Human Agency is an important factor, and of the species under present consideration we may say with some certainty that the following have been introduced into these islands by man, viz. :—*Corcyra cephalonica*, *Ephestia cautella*, *Pyralis manihotalis* and *P. farinalis*.

VII. ON WIDELY DISTRIBUTED FORMS OF LEPIDOPTERA.

One point which is clearly brought out in the Distribution-Table is the extremely large number of species (39 out of a total of 149, or 26 per cent.) which occur at the same time in the African, Indian, and Australian Regions. The usual observation, of course, is that these are common and widely distributed species; but this seems rather to avoid the question, which is really: How does it happen that these species are so widely distributed? Of these 39 no less than 16 are Pyralids and Pterophorids, and although three or four of these may and doubtless have been transported by man, this cannot apply to the rest, which are insects of weak flight and quite unable to cross large expanses of ocean by their own efforts. It may be urged that these species have radiated from a common centre and that they are still connected by a syngamic chain from South Africa up the east coast, around to India and down through Malaysia to Australia; but, after all, a chain is no stronger than its weakest link, and I doubt the occurrence of many of these particular species between East Africa and India, although the Distribution-Table will show that some of them occur in Sokotra; nor can the idea of a syngamic chain be applied to species (such as *Amyna octo*, *Hyblæa puera*, *Sylepta derogata*, *Marasmia trapezalis*, and *Trichoptilus defectatis*) which are found on both sides of the Atlantic. And, unless there is some syngamic connection, it seems incredible that these species should retain the same facies in such diverse habitats, more especially as some of them (e. g. *Amyna octo*) are extremely variable. It would be a most interesting subject for experiment to see whether specimens of a "species" from South Africa are capable of interbreeding with specimens of the same "species" from the West Indies, Ceylon, and Australia.

In the meantime it seems probable that the wide distribution of so many species shows the operation of means of dispersal far more regular and efficient than is commonly believed to be the case, and possibly these means may be found to consist in the action of cyclonic storms in combination with the movements of the upper strata of the atmosphere, whereby these insects are whirled up into the air and transported for long distances with very little expenditure of energy on their own behalf.

VIII. LITERATURE.

Besides the ordinary text-books and periodicals, the following books and papers will be found useful to the student of the Lepidoptera occurring in the islands of the Indian Ocean :—

- Boisduval.**—Faune entomologique de Madagascar, Bourbon et Maurice. Paris, 1833.
- Guenée.**—Annexe G (Lépidoptères) in Maillard's 'Notes sur l'île de la Réunion.' Paris, 1863.
- Trimen.**—Notes on the Butterflies of Mauritius. Trans. Entom. Soc. London, 1863, pp. 329-344.
- Snellen.**—Lepidoptera in Prof. P. J. Veth's 'Midden-Sumatra: Reizen en Onderzoekingen der Sumatra-Expeditie . . . 1877-1879.' 1880.
- Distant.**—Rhopalocera Malayana. London, 1882-1886.
- Moore.**—Lepidoptera of Ceylon. 3 vols. London, 1882-1887.
- Mabille.**—Volume on Butterflies in Grandidier's 'Histoire Naturelle de Madagascar.' Paris, 1887.
- Saalmüller.**—Lepidopteren von Madagascar. Frankfurt, 1884-1891.
- Joannis.**—Descriptions of *Atella philiberti*, *Pamphila morella*, and *Macroglossa alluaudi*. Bull. Soc. Ent. Fr. 1893, pp. 50-53.
- Ragonot.**—*Heterographis insularella*, n. s. L. c. p. 295.
- Hampson.**—Illustrations of Lepidoptera Heterocera in the British Museum. Part IX. London, 1893.
- Joannis.**—Lépidoptères des îles Séchelles. Ann. Soc. Ent. France, 1894, pp. 425-438.
- Holland.**—List of the Lepidoptera from Aldabra, Seychelles, and other East African Islands, collected by Dr. W. L. Abbott. Proc. U.S. Nat. Mus. xviii. pp. 265-273, 1895.
- Hampson.**—Fauna of British India; Moths, 4 vols. London, 1892-96.
- Joannis.**—Note sur quelques Lépidoptères des îles Séchelles. Bull. Soc. Ent. Fr. 1899, pp. 197-200.
- Andrews.**—A Monograph of Christmas Island. Lepidoptera, pp. 60-79. London, 1900.
- Hering.**—Uebersicht der Sumatra-Pyralidæ. Stett. ent. Zeit. vol. lxii. pp. 13-118, 219-348 (1901); and vol. lxiv. pp. 38-97 (1903).
- Voeltzkow.**—Die von Aldabra bis jetzt bekannte Flora und Fauna. Abh. Senck. nat. Ges. Band xxvi. pp. 559-561. Frankfurt, 1902.
- Meyrick.**—Fauna and Geography of the Maldive and Laccadive Archipelagoes. Edited by J. Stanley Gardiner. Vol. i. pp. 123-126. Cambridge, 1902.
- Forbes.**—The Natural History of Sokotra and Abd-el-Kuri, pp. 295-356. Liverpool, 1903.
- Bingham.**—Fauna of British India; Butterflies. 2 vols. London, 1905-1907.
- Joannis.**—Description des Lépidoptères nouveaux de l'île Maurice. Ann. Soc. Ent. Fr. 1906, pp. 169-183.
- Pagenstecher.**—Lepidoptera-Heterocera von Madagascar, den Comoren und Ost-Afrika. (Voeltzkow, Reisen in Ostafrika, 1903-1905.) Stuttgart, 1907.

Hampson.—On the Moths collected during the Cruise of the 'Valhalla.' Ann. Mag. Nat. Hist., June 1908, pp. 474–492.

Manders.—The Butterflies of Mauritius and Bourbon. Trans. Entom. Soc. Lond. 1907, pp. 429–454 (1908).

Aurivillius.—Lepidoptera, Rhopalocera und Heterocera (pars 1), von Madagaskar, den Comoren und den Inseln Ostafrikas. (Aus Voeltzkow, Reisen in Ostafrika.) Stuttgart, 1909.

[This paper has only recently appeared and I have not yet seen a copy.]

NOTE.—Since writing the foregoing I have seen two other works dealing with the Lepidoptera of this region.

The first of these is a paper entitled "Lepidopteren aus Südarabien und von der Insel Sokotra," by Prof. Dr. Rebel, which appeared in part 2 of vol. lxxi. of the 'Denkschriften der Mathematisch-Naturwissenschaftlichen Klasse der kaiserlich-königlichen Akademie der Wissenschaften' (Vienna, 1907). Copies of this publication do not appear to have reached this country as yet, and I am indebted to Dr. Rebel for a separate reprint of his paper, in which he adds to the fauna of Sokotra the following species in addition to those marked with a × in the Distribution-Table, viz.:—*Hypolimnas bolina*, *H. misippus*, *Chloridea armigera*, *Prodenia littoralis*, *Plusia limbirena*, *Ephestia cautella*, *Pyralis farinulis*, and *Phlyctanodes massalis*.

The second paper, "On the Fauna of Cocos-Keeling Atoll," by Dr. F. Wood-Jones, appeared in the 'Proceedings of the Zoological Society of London' for 1909, pp. 144–149, and includes the following species besides those noted in my original paper, viz.:—*Chloridea armigera*, *Herse convolvuli*, *Hippotion velox* [= *vigil*], *Crocilomia binotalis*, and *Glyphodes indica*.

The addition of the above records to the Distribution-Table does not appear to invalidate the remarks made on pages 317–319 (*supra*).—T. B. F.

23rd December, 1909.

EXPLANATION OF PLATE 17.

- Fig. 1. *Asinduma nesta*. S. Providence.
 Fig. 2. *Chloroclystis metallicuta*. D'Arros.
 Fig. 3. *Hypolimnas bolina*, ♀ var. Chagos.
 Fig. 4. *Crambus seychellellus*. Seychelles.
 Fig. 5. *Cirrhochrista perbrunnealis*. Seychelles.
 Fig. 6. *Endotricha chagosalis*. Chagos.
 Fig. 7. *Sufetula minimalis*. Coetivy.
 Fig. 8. *Nacoleia maculalis*. Seychelles.
 Fig. 9. „ *chagosalis*. Chagos.
 Fig. 10. „ *salomonalis*. Chagos.
 Fig. 11. *Glyphodes subamicalis*. Seychelles.
 Fig. 12. *Isocentris seychellalis*. Seychelles.
 Fig. 13. *Pachyzancla mahensis*. Seychelles.
 Fig. 14. *Pyrausta mahensis*. Seychelles.
 Fig. 15. Larva of *Utetheisa pulchelloides*.
 Fig. 16. „ „ *lactea*.
 Fig. 17. „ „ *elata*, var. *diva*.

All figures are of the natural size unless otherwise indicated by the hair-line against them.